
GUIDANCE
MARINE
Expert Positioning Technology
Offshore & Marine Solutions
from Guidance Marine
Expert relative positioning sensors from 10m to 5,000m
www.guidance.eu.com

> We continue to innovate, continue to offer best in class, and continue to improve our market leading products to enhance value year on year

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Technology and Applications

Expert relative positioning sensors from 10m to 5,000m

Guidance Marine is a leading global developer and supplier of Dynamic Positioning (DP) position measurement technologies for high value offshore marine markets for real-time vessel positioning and manoeuvring with the highest level of safety, reliability and ease of use.

Designed to meet all IMO DP class requirements, our laser and microwave Artemis®, CyScan®, RadaScan®, RadaScan® View and RangeGuard® sensors can be integrated by all major DP manufacturers and are used on a daily basis by most Offshore, Platform Supply Vessel, Shuttle Tanker and FPSO operators for DP1, DP2 and DP3 class vessels. Our products accurately measure relative position to enable the vessel to hold position and manoeuvre safely in close proximity to an installation, immune from GPS errors caused by shadowing or reflections.

Our global support network underpins all activities and continues to expand into key oil producing regions. With local Guidance Marine service and support centres in Aberdeen, New Orleans, Singapore and representation in Brazil.

The Business of Safety

Providing customers with smarter local position reference sensors

Guidance Marine is the only company able to supply four local reference systems offering the greatest choice on the market. Based in the UK, we understand the importance of quick deployment and have sales and service capability in all the major oil producing regions of the world. We understand the importance of having spare parts and experienced personnel where our customers' need them. We continue to invest heavily in developing a network of service agents, equipped with a full set of spares to cover all the major offshore areas of the world. Underpinned by our 3 year warranty and global support network; our products are robust, reliable and proven to deliver optimum navigational performance in the harshest offshore environments.

A Guidance Marine designed position reference system is more than just a sensor. A practical, well-engineered piece of sophisticated architecture that can be integrated into all the major DP systems anywhere in the world.

Rolls-Royce©

Trusted Partner of Choice

Precise. Positioning. Performance.

As an internationally successful, award winning company, Guidance Marine has a strong track record of delivering significant safety and cost benefits by bringing innovative position measurement technologies to high value markets across several continents. Whether our customers' are looking to equip their vessels with a sensor for positioning and station-keeping, or protect an asset with targets for the safe approach during the 500m zone, Guidance Marine's sensor technology is suitable for a variety of fixed and mobile operations.

Vessel Masters and DP Operators

Guidance Marine strives to supply the best in class position reference sensors to Dynamic Positioning (DP) enabled vessels, mostly in the Oil & Gas industry. We focus on reliability so our customers' can remain on charter – and fast and dependable target acquisition allowing customers to DP early and offload fast and safely. We remain the only supplier to offer a three year warranty and to have fog tested our laser product. For hose work or other long periods of close proximity DP, Guidance Marine is your dependable partner.

Fleet Owners

Guidance Marine recognises our customers' need to maximise vessel uptime, keep fleet costs to a minimum, and have high specification vessels capable of winning the highest value contracts. With a global spares and service network, supported by our own offices and service staff in Aberdeen, New Orleans and Singapore we can mobilise technicians and spares anywhere in the world at very short notice. Our fleet upgrade contracts offer life-of-vessel support that ensures our customers' costs are minimised. The quality and ease of use of our equipment guarantees the support of captains.

Oil Majors

Offshore installations are best protected by Guidance Marine. Only Guidance Marine offer both laser and microwave products that allow the vessel to engage the DP system from 1000m. Our patented sensor technology minimises the danger of false targets and unexpected vessel movement. Our range of reliable and rugged laser and microwave targets provide the lowest cost route to ensuring Offshore Installations are appropriately instrumented to incoming vessels. Guidance Marine is our customers' trusted partner for safe long period hose work and tight weather windows. Guidance Marine works hard to add value to your supply fleet.

Our Track Record

Guidance Marine has a rich heritage of innovation since being founded over two decades ago.

Since then, our company name has changed more than once, but we've always preserved our core values of innovation, engineering excellence and technological integrity.

Positioning, whatever the technology or application has always been in our DNA. We are a company that prides itself on science based innovation, not imitation. The company has, and continues to play, a pivotal role in stimulating change within the markets it operates in. Our business philosophy and problem solving mind-set harnesses personal initiative, as everyone has a contribution to make.

Solving tomorrow's problems, today

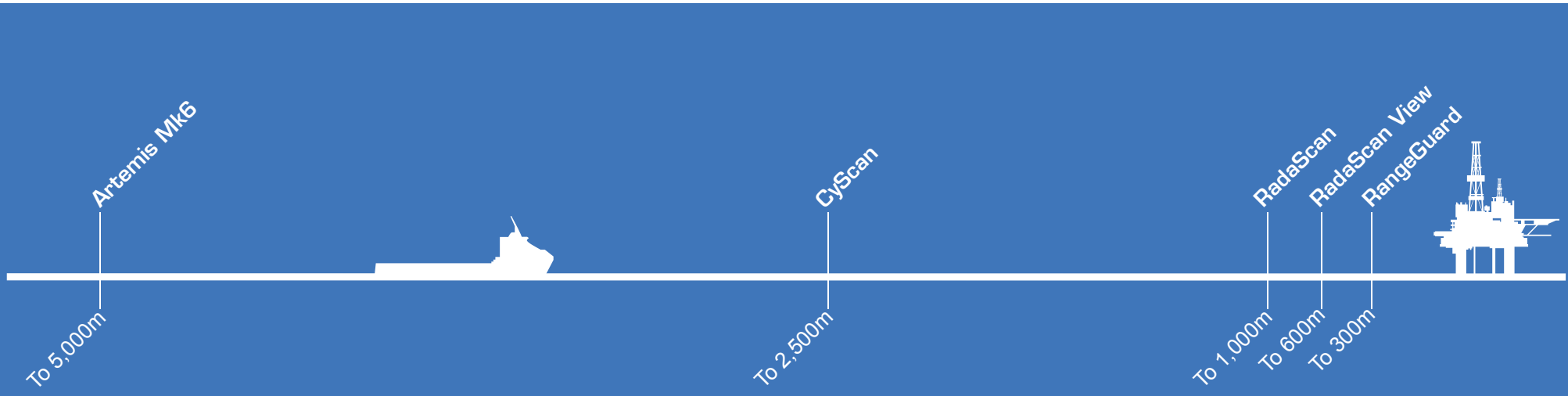
Guidance Marine is pioneering the use of the local environment to provide position reference sensors that reduce the interdependence between Platform Supply Vessels and the Oil Rigs they are supplying.

In recent years Guidance Marine has been very proud of listening to the end users, and understanding them. We continue to innovate, but – and possibly more importantly – we continue to listen.

The Changing Offshore Landscape

Providing customers with smarter local position reference sensors

At Guidance Marine we respond to challenges being faced in the industry today by providing solutions that continuously raise the industry standard. Our product portfolio includes both targeted and non-targeted solutions which improves our customers' offering across a multitude of operations. Removing the need to install targets in many operations eliminates the need to continuously maintain and deploy targets prior to an operation. Developed on the same positioning science and core safety principles, environmental referencing technology is the next evolution in local position reference sensing. Our RangeGuard system does not use fixed targets – it used the surrounding environment and provides the operator with an additional level of situational awareness.



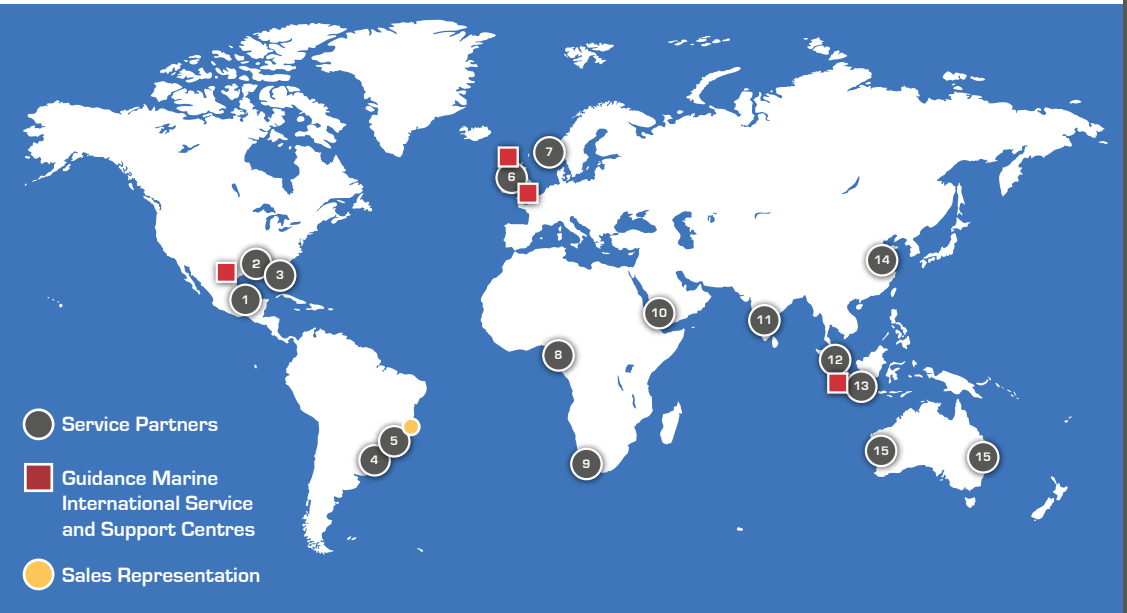
International Service and Support Centres

Guidance Marine has recognised the need for rapid response and have invested significantly in a Global Support Network of Authorised Service Partners (ASPs).

Guidance Marine service engineers have personally provided all the ASPs with comprehensive technical training in order to fully support Guidance's range of products.

USA and Singapore service and support centres opened in 2014 to underpin our current network and worldwide customer base.

1	Proesa Electrónica, S.A. De C.V.	MEXICO
2	StarTech Marine Electronics, Inc	USA
3	Complete Marine Services LLC	USA
4	Japan Radio Company Ltd	BRAZIL
5	NET-SYSTEM Telecomunicações Ltda	BRAZIL
6	Proteus Dynamic Ltd	UK
7	VICO	NORWAY
8	Electro-Marine	CAMEROON
9	Dynamic Marine Systems	SOUTH AFRICA
10	KDU Worldwide Technical Services FZC	U.A.E
11	P.R.O. Marine Solutions Pvt. Ltd	INDIA
12	Dynamic Positioning Tech SDN BHD	MALAYSIA
13	Quality Marine Services Pte. Ltd	SINGAPORE
14	Nor-marine Ltd	CHINA
15	Cadeni Australia	AUSTRALIA



Product Training

In today's operational climate, with increasing pressure on product reliability and the cost of ownership, a basic understanding of DP sensor technology is not enough. Training is the cornerstone of strengthening knowledge and technical competence. This is of paramount importance with today's user expected to become more and more self-sufficient.

Guidance Marine run Operator and Engineer courses focusing on CyScan Mk4, RadaScan and Artemis. Through a combination of theoretical and practical lessons, experienced field service engineers bring real world experience in a hands-on classroom environment to demonstrate an all-round technical and operational understanding of the true product benefits.

3 Year Warranty

At Guidance Marine we take pride in leading the market and our 3 year warranty introduced in April 2014 offers the best peace of mind available as standard today. It reflects the confidence we have in our products and the benefit of years of continuous engineering improvement and proven experience with all Dynamic Positioning suppliers in the harshest environments.

We have listened to our customers and understand the implication costs to your business of failures in the field. We also understand the need to have replacement parts and stock in your areas of operation. Our international service and support centres in Aberdeen, New Orleans and Singapore reinforce our commitment to your business.

This initiative reflects our intention to continue to position ourselves as the local position reference sensor supplier of choice and work hard as your partner in Dynamic Positioning.

Online Sales

Guidance Marine Direct (GMD) is the new global online sales platform for Guidance Marine. Designed for the convenience of our customers', the website's primary purpose is to facilitate the sales of peripheral items. In particular the site will be focusing on targets, prisms, responders and all the vessel approach instrumentation that is the responsibility of the Installation Operators.

GUIDANCE MARINE DIRECT
brought to you by www.vesselapproach.org

www.marine.direct

Platform Supply

Guidance Marine's products are utilised worldwide in dynamic positioning operations. Typical platform and vessel instrumentation is illustrated here.

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CyScan
Positioning Technology From GUIDANCE

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RadaScan
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RadaScan•View
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RangeGuard
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Rugged Prism
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Laser Targets
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Responders
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Offshore Loading

Guidance Marine's products are utilised worldwide in dynamic positioning operations. Typical FPSO and Shuttle tanker instrumentation is illustrated here.

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6 RUGGED PRISM Positioning Technology From GUIDANCE
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RESPONDERS Positioning Technology From GUIDANCE
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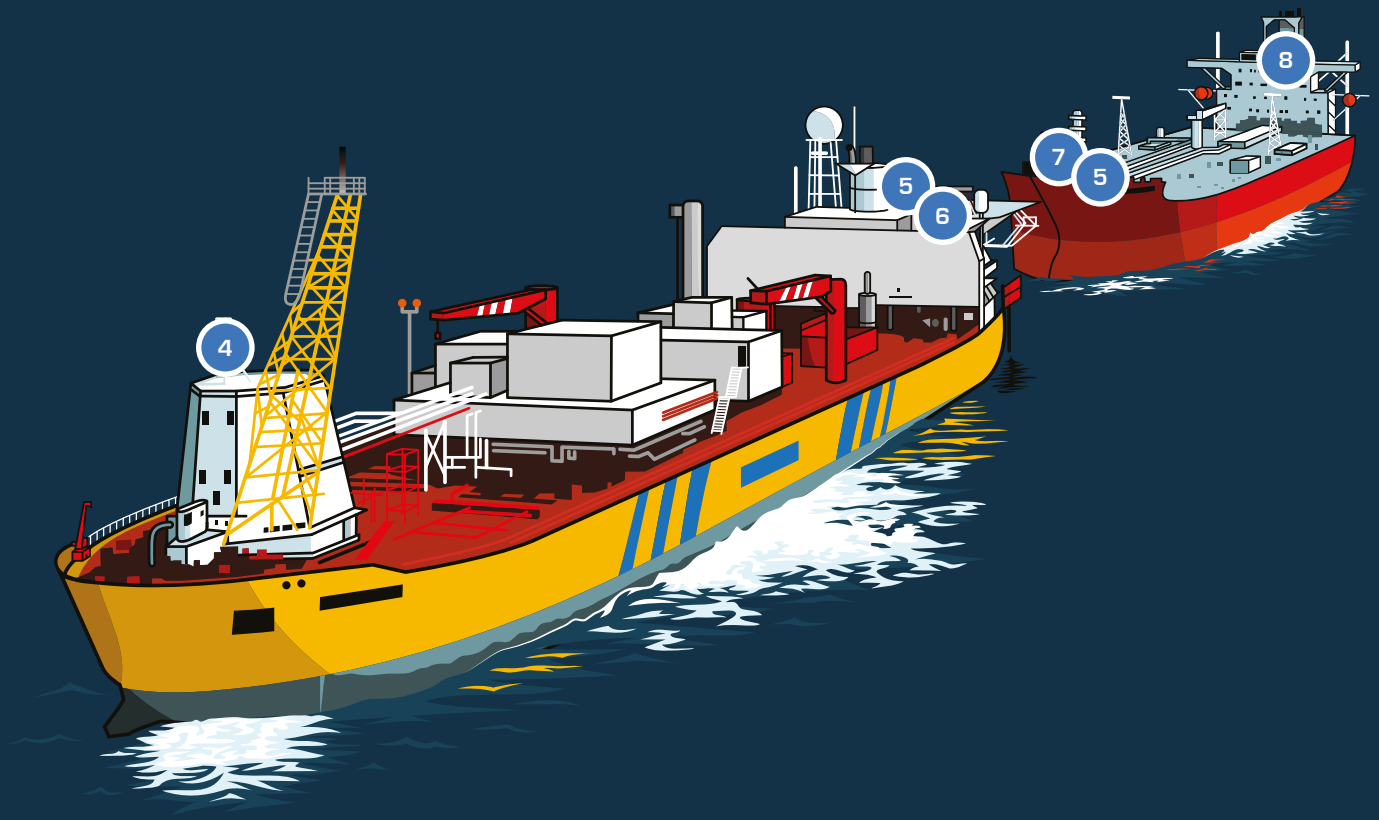


Illustrations by Station Jack

ARTEMIS

Positioning Technology From GUIDANCE

The longest range local Position Reference Sensor

The Artemis Mk5 sensor is a microwave position reference system for use in long range marine Dynamic Positioning (DP) applications. The sensor accurately measures the range and bearing of a mobile asset relative to a fixed position. The position is determined by measuring the absolute distance and the relative angle between two Artemis stations.

The longest range radar reference sensor in the market today, it is typically used in the offshore operation of offloading and transportation of oil between shuttle tankers and FPSOs. The Artemis Mk6 sensor builds on over 40 years of Artemis pedigree, combining proven microwave antenna tracking techniques with Guidance Marine's new innovative Dashboard and commissioning tool.

Applications

The Artemis sensor is suitable for applications which use fixed and mobile structures such as:

- Hydrographic and seismic survey
- In and offshore positioning and dredging
- Track and ship-follow
- Pipe and cable laying
- Shuttle tanker loading
- Dive support

- **Operating range up to 10km**
- **All weather operation**
- **Automatic beacon and sensor acquisition**
- **Overcomes GNSS scintillation**
- **Interchangeable antennae and antenna units**
- **New Dashboard control**
- **Stations and beacons compatible with legacy Mk5 systems**

QUALITY ASSURED 3 YEAR WARRANTY See our standard terms of sale

Delivering the future in dynamic positioning with consistently accurate products.

The Artemis System

The Artemis system has three main components which vary depending on the system configuration

1.

Fixed Station

Artemis sensor is installed on the FPSO

2.

Mobile Station (position determined)

Artemis sensor is installed on a shuttle tanker equipped with a DP system

3.

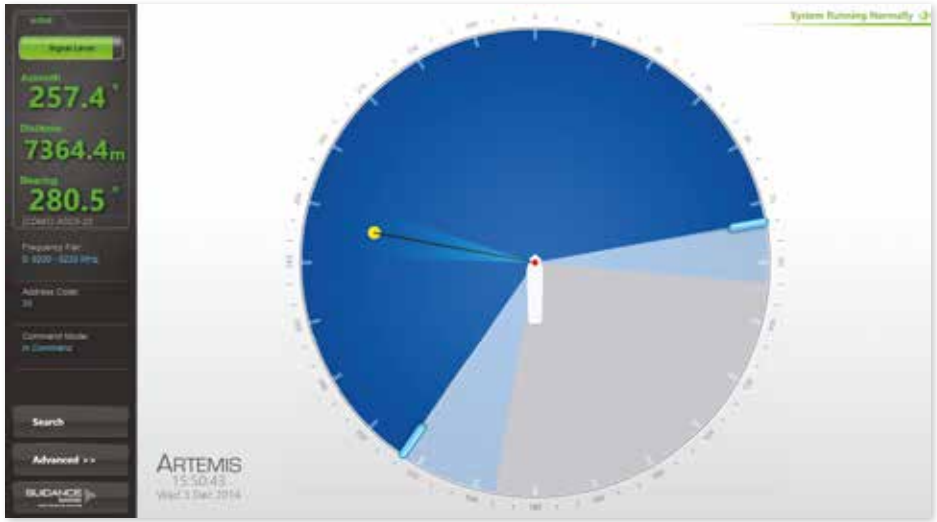
Artemis Dashboard

Software is used by the DP Operator to control the Artemis sensor. It runs on a marine computer installed on the vessel's bridge

Artemis Dashboard

The Artemis Dashboard is a user interface that has been logically structured and carefully designed to provide an intuitive user experience that maximises the opportunities of multi-touch user control and touch screen technology.

The same user interface philosophy is used on our CyScan and RadaScan systems, helping to make sure that Guidance Marine trained operators will already be familiar with controls.



Artemis Service Interface

The dedicated Service Interface offers a faster setup time including handling all radar antenna setup parameters from the PC rather than out at the sensor. It can also be used to read the position data when the system is in operation. This greatly improves commissioning and maintenance turnaround time.

Unique Features

- Operates in rain, snow, fog, steam and dust in temperatures ranging from -20˚C to +55˚C
- Overcomes the effects of GPS and DGPS shadowing
- Distance, azimuth and heading available at both stations
- Anti-ice and anti-snow heating for mobile and fixed stations
- Fully compatible with all modern DP systems

System Configuration

The two identical user configurable stations of the standard system are:

Mobile Station

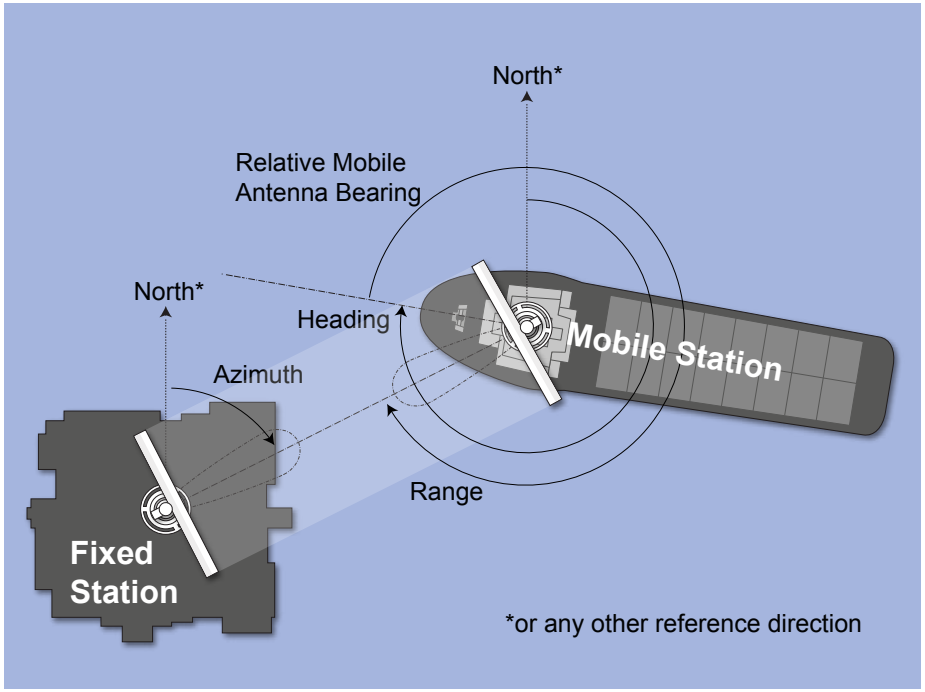
- installed onboard the vessel of which the position must be determined.

Fixed Station

- installed at a fixed point, such as an oil rig, platform or FPSO.

Standard System Principle of Operation

The system is locked in when the antennas of the fixed and mobile station automatically track each other by maintaining a continuous wave (CW) microwave link. This tracking is such that the imaginary line connecting both antennas centres is always perpendicular to the two antennas, even when the mobile station moves.



ARTEMIS VALIDATOR

Positioning Technology From GUIDANCE

Testing Artemis Mobile Stations On The Move

Artemis Validator is a rugged unit that provides the ability to test the Artemis position reference sensor without the need for a second sensor. Available in two variants; battery powered for portable testing and mains powered for fixed installations. The simple interface allows selection of simulated test ranges and frequency pairs, along with access to Validator diagnostics.

The Artemis Validator target simulator is the latest offering in Guidance Marine's ongoing commitment to increase safety and reduce operating costs.

- **Test Artemis Mobile stations on the vessel**
- **Simulate test ranges, frequency pairs and diagnostics**
- **Enable end to end FMEA testing**

Standards Compliance EN 60945

Water and Dust Protection IP67 certified

CyScan

Positioning Technology From GUIDANCE

The standard laser sensor of choice by major DP Integrators

The CyScan sensor is a high performance local position reference sensor specifically engineered for marine Dynamic Positioning (DP) applications.

The sensor accurately measures the range and bearing to retro-reflective targets allowing for the calculation of vessel position and heading making it ideal for station keeping, or for accurately moving a vessel.

Applications

The CyScan sensor is suitable for applications which use fixed structures such as:

- Platform, offshore and multipurpose supply vessel operations
- Wind farms servicing
- Accommodation barge operation
- Crew boats station-keeping
- Heavy lift activities
- Dive and ROV support
- Fish farms

The CyScan sensor is also suitable for DP applications with mobile structures such as:

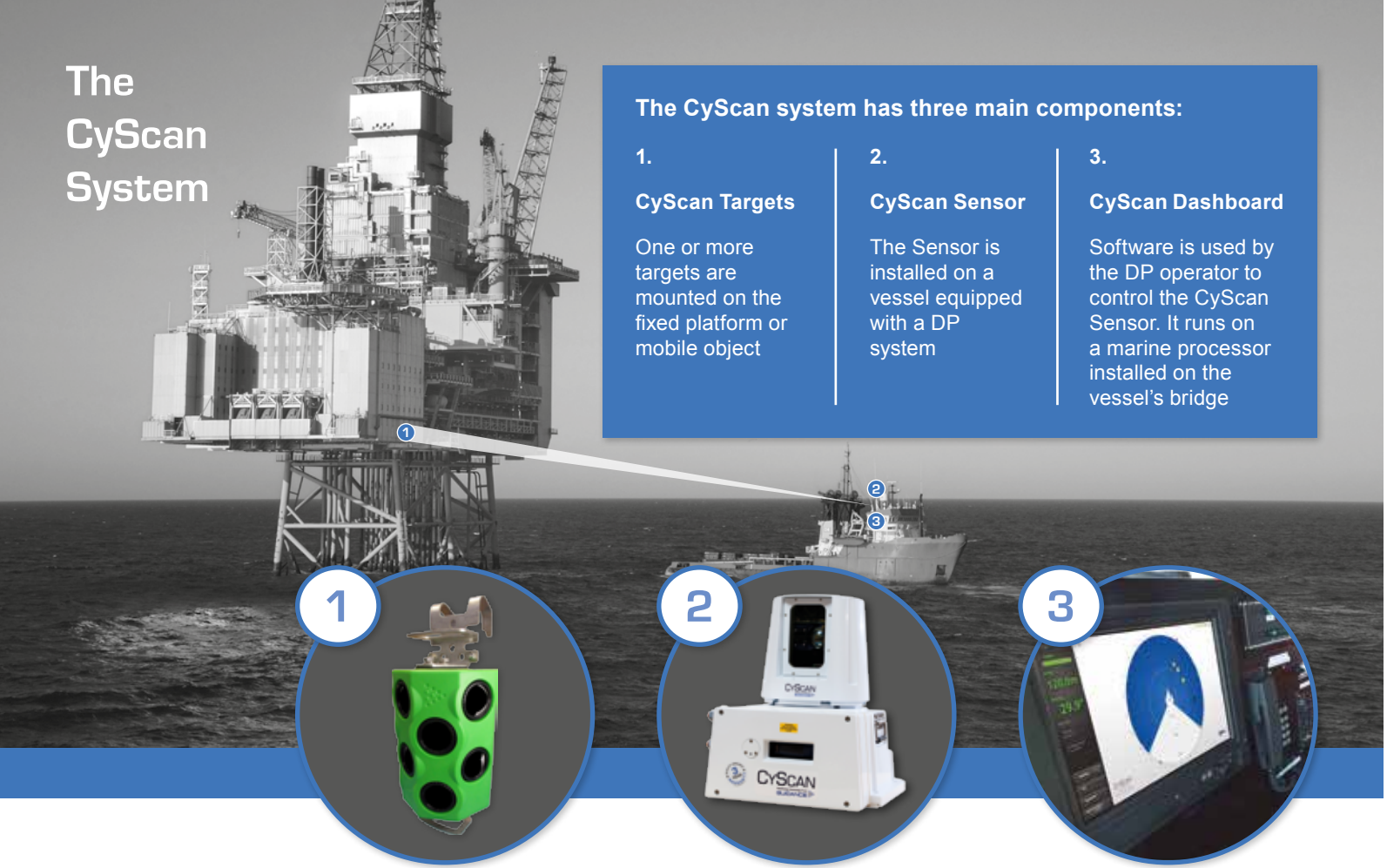
- Track and ship-follow
- Shuttle tanker loading
- Pipe and cable laying
- Rock dumping
- Replenishment at sea

- Automatic wave compensation
- Close range operation from 10m
- Full 360° scanning
- Operating range up to 2,500m
- True ChartRange™ distance option
- Uniquely holds 4 type approvals: ABS, DNV GL, Lloyds Register and Russian Maritime Register of Shipping

QUALITY ASSURED 3 YEAR WARRANTY
See our standard terms of sale

Delivering the future in dynamic positioning with consistently accurate products.

The CyScan System



The CyScan system has three main components:

1.

CyScan Targets

One or more targets are mounted on the fixed platform or mobile object

2.

CyScan Sensor

The Sensor is installed on a vessel equipped with a DP system

3.

CyScan Dashboard

Software is used by the DP operator to control the CyScan Sensor. It runs on a marine processor installed on the vessel's bridge

CyScan XT

Designed for Ice and Arctic Operations

CyScan XT is an extreme low temperature, -40°C variant of the standard laser position reference sensor. The XT sensor range enjoys all the functionality and operational benefits of the conventional laser and microwave reference technologies but have been designed to operate in Ice and Arctic operations.

Seismic Surveying

The latest CyScan software has a multi-target, individual track algorithm specifically for seismic surveys.

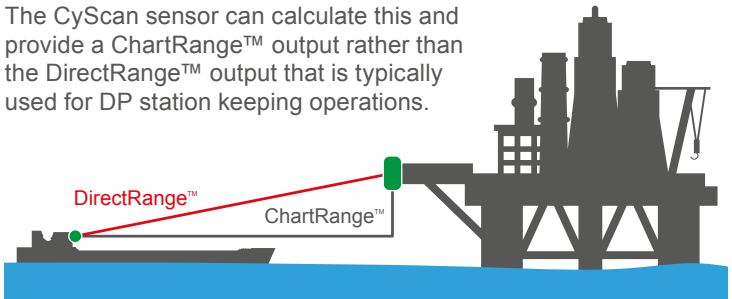
In individual tracking mode the CyScan sensor tracks range and bearing to individual targets, such as targets located on Seismic Streamer tows.

ChartRange™

The CyScan sensor has the option to provide a direct horizontal distance (ChartRange™) to the reflectors.

For certain precision positioning operations it is advantageous to have an indication of the horizontal distance to the target.

The CyScan sensor can calculate this and provide a ChartRange™ output rather than the DirectRange™ output that is typically used for DP station keeping operations.



Unique Features

- High Laser Pulse rate 30Khz
- True multi-target operation gives relative heading
- Selectable tilt at 1° increments, including auto-adjusting option
- Robust construction for highest reliability
- Ease of use for quick set-up and operation
- Automatic dynamic pitch/roll wave motion compensation provides optimum target lock
- Sophisticated tracking algorithms reject false reflections
- Optimised optics protect against low sun and bright lights
- Interfaces to all known DP systems
- Tracking is not stopped when manually tilting

CyScan Dashboard

The CyScan Dashboard is an innovative touch screen interface that enables DP operators to use the CyScan sensor safely whilst providing optimum positioning performance.

The CyScan Dashboard is a state of the art solution to the control of the CyScan Mk4 sensor.

The same user interface philosophy is used on our Artemis and RadaScan systems, helping to make sure that Guidance Marine trained operators will already be familiar with controls.

AS PRISM

Positioning Technology From GUIDANCE

The next generation in laser reference technology; delivering new levels of confidence

The Absolute Signature (AS) Prism is designed to endure the harsh environment of offshore weather conditions. The bright coloured exterior allows vessels to easily identify the visual target from a distance. Combined with the latest innovative technology, the AS Prism delivers a level of confidence previously unachievable in laser position reference sensor positioning.

Applications

AS Prisms are suitable for applications which use fixed structures such as:

- Wind turbines
- Oil platforms

AS Prisms are also suitable for applications with mobile structures such as:

- Track and ship-follow
- Shuttle tanker loading
- Pipe and cable laying
- Rock dumping
- Replenishment at sea

QUALITY ASSURED 3 YEAR WARRANTY See our standard terms of sale

AS technology benefits*:

- Guaranteed 'lock' between the sensor and target
- Improves visibility with automatic target identification and acquisition
- Reduces turnaround time – increases operational efficiency
- Eliminates the possibility of false reflection walk-off incidents
- Simple and reliable operator experience

*when used in conjunction with CyScan AS, to be launched in 2017

Delivering the future in dynamic positioning with consistently accurate products.

Key Prism Features

Prisms reflect almost all of the light received and provide the maximum signal strength allowing for longer operation in deteriorating visibility. They are typically mounted in clusters to provide a greater angle of visibility and/or to increase the signal response in locations prone to low visibility.

Reflective Prisms are becoming a standard choice for laser targets for offshore fixed assets as they are smaller, and are more robust than a tape target. UV degradation and salt build up will reduce the reflectivity of tape targets over time and consideration should be given to mandatory use of AS Prisms for instrumentation.

- Compatible with all laser sensors
- High visibility, easy to identify
- Robust housing design suitable for handovers
- Easy ‘drop on’ rail mounting
- Suitable for long-term wall or handrail mounting
- Increased range and durability over tape targets

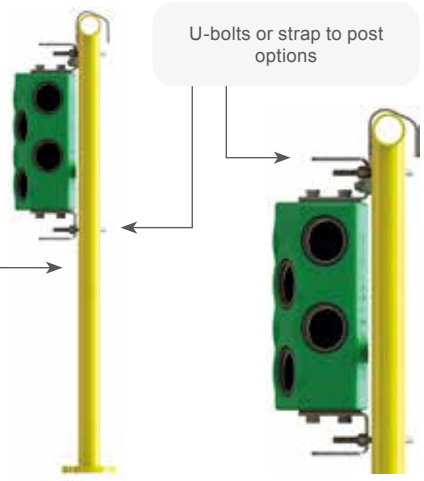
Drop down bracket suits varying rail diameters

Side slots for 2.5 inch U-bolts or existing straps to fit varying rail diameters

Fitting against posts keep the target vertical

- Handles on both ends
- Bottom handle enables the unit to stand
- Security lanyard included in the purchase of a Rugged Prism

Drop Down Rail Installation



AS Prism Angular visibility 195° Weight: 12.5kg (boxed) Dimensions: 560 x 240 x 340mm (boxed)

Additional Installation Options

Rail Unistrut Install (Unistrut parts not supplied)

Railing Post Option

The new easy drop on design allows the prism to hold its position on a rail without the need of u-bolts for temporary use.

Laser Targets

Reflective laser targets rely on having enough randomly scattered reflective material within the tape that some will retro-reflect. These are lower cost solutions but the signal attenuation at the reflector limits the maximum operating range and will cause a much earlier loss of signal in deteriorating visibility. They are short range, entry level reflectors and are recommended for augmenting prism clusters at installations with complicated layouts and cluttered vessel approaches.

For maximum safety, Guidance Marine always recommend glass prisms.

Typical Operating Range with CyScan MK4

- **10m to 400m (1.9m cylindrical)**

Cylindrical 1.9m long

(1.52 tape) x 200mm wide
Plastic construction target.

Weight: 10.5kg (boxed)
Dimensions: 220 x 1940 x 220mm (boxed)

Guidance Marine can manufacture customised laser targets at the user's request. An example includes a 1.5m target customised to wind-farm projects.

*To maximise the true performance of the CyScan, Guidance Marine will only provide the best quality adhesive coated, sealed, retro-reflective clusters and 3M diamond grade tape which provides up to 50% greater retro reflective efficiency.

- **Compatible with all laser sensors**
- **Industry standard**
- **Easy to mount**
- **Entry level**
- **Dimensions specifically chosen for optimal performance**
- **Suitable for short range operations**

RadaScan

Positioning Technology From GUIDANCE

Premium long range, high precision radar sensor

The RadaScan sensor is an advanced premium position reference sensor for long range use in marine Dynamic Positioning (DP) applications.

The sensor accurately measures the range and bearing of one or more intelligent microwave targets called responders, allowing for the calculation of vessel position and heading.

Applications

The RadaScan sensor is suitable for all traditional offshore applications which use fixed and mobile structures along with niche vessels such as:

- Coast guard support
- Polar research supply
- Semi-submersibles
- Well intervention vessels
- Ultra deep water anchor handling
- Shuttle tankers

- Operating range up to 1000m
- All weather operation
- Auto target detection
- Full 360° scanning
- High precision capability
- 500m+ DP capability
- Extreme low temperature -40°C variant

QUALITY ASSURED 3 YEAR WARRANTY See our standard terms of sale

Delivering the future in dynamic positioning with consistently accurate products.

The RadaScan System

The RadaScan system has three main components:

1.

RadaScan Responders

One or more uniquely coded responders allow for safe and reliable tracking are mounted on the fixed platform or mobile structure

2.

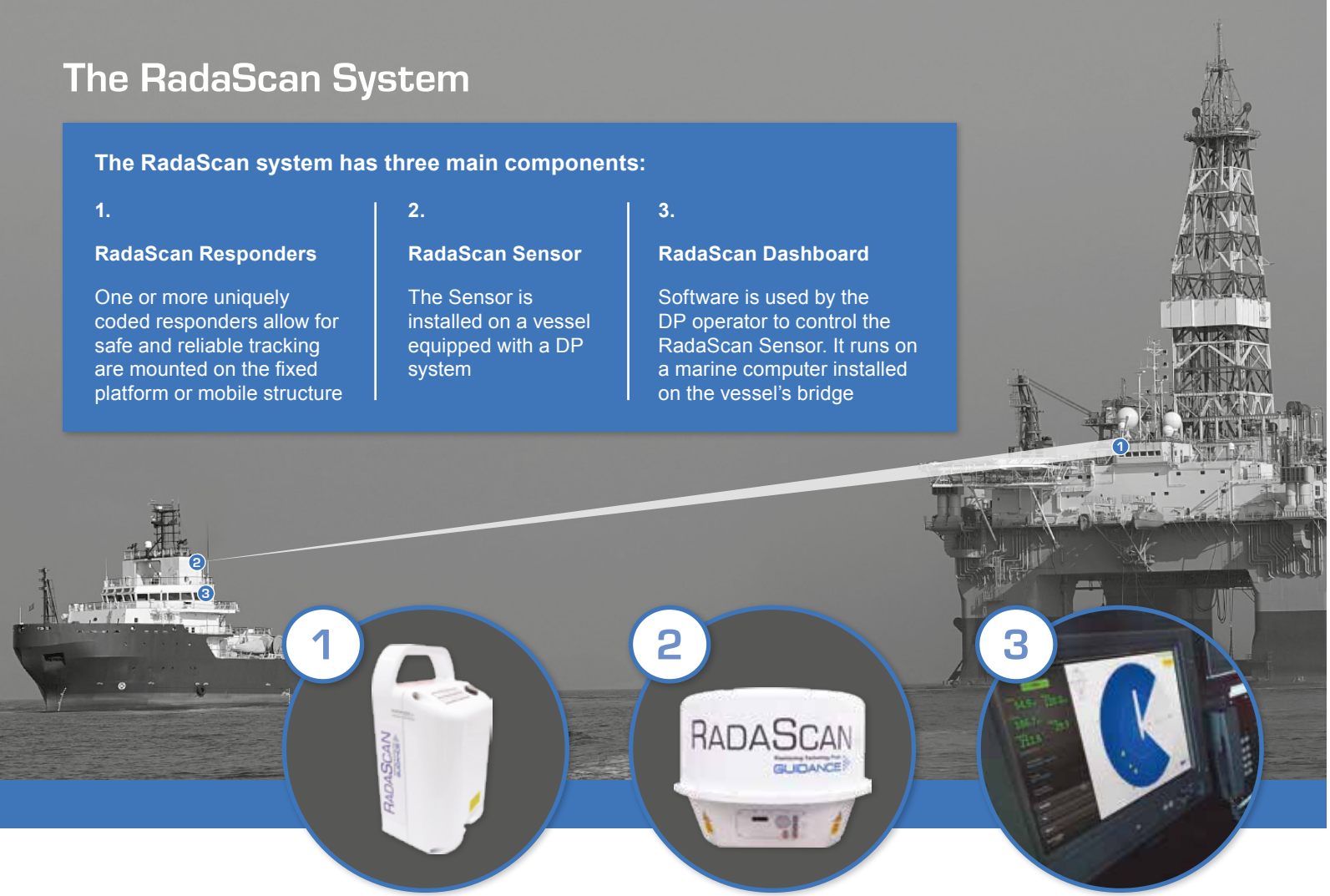
RadaScan Sensor

The Sensor is installed on a vessel equipped with a DP system

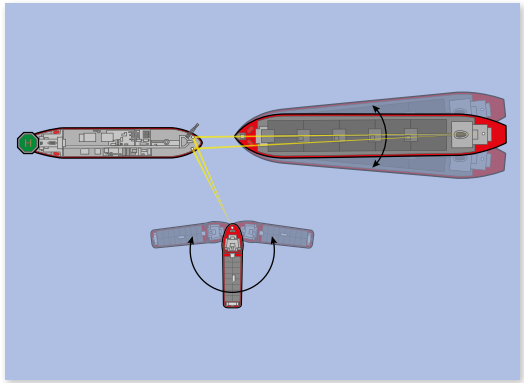
3.

RadaScan Dashboard

Software is used by the DP operator to control the RadaScan Sensor. It runs on a marine computer installed on the vessel's bridge



The RadaScan system is an established microwave sensor and is typically used for the most critical types of DP operations. The example of a complex operation shows the benefits of the 360° RadaScan sensor coverage, automatic multi-target detection, and the need for "hands-free" operation. The shuttle tanker and offshore supply vessels have a RadaScan sensor fitted, while two responders are placed at strategic locations on the FPSO. Both the tanker and OSV can, independently, use either or both targets simultaneously. Using two responders provides redundancy and independent, precise heading control.

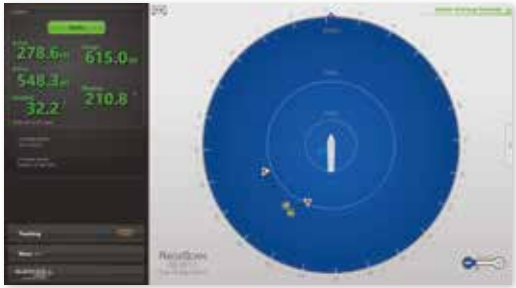


RadaScan XT

RadaScan XT is an extreme low temperature, -40°C variant of the standard microwave position reference sensor. The XT sensor range enjoys all the functionality and operational benefits of the conventional laser and microwave reference technologies but have been designed to operate in Ice and Arctic operations.

Unique Features

- Provides the highest positional accuracy usually associated with higher precision DGPS
- Operates through rain, snow, fog, steam and dust in temperatures ranging -40°C to +55°C
- Target tracking outside the 500m zone
- Unaffected by the GPS/DGPS signal shadow when working close to platforms
- Multi-vessel capability - each responder can be used simultaneously by any number of vessels
- All targets are UL and ATEX certified as intrinsically safe for use in hazardous offshore environments
- Fully compatible with all modern DP systems
- Easy upgrade options in the field via USB key or optional remote access



RadaScan Dashboard

RadaScan Dashboard's clear display and intuitive user interface enables DP operators to use the RadaScan sensor safely and effectively.

The RadaScan Dashboard is a state of the art solution to the control of the RadaScan sensor.

The same user interface philosophy is used on our Artemis and CyScan systems, helping to make sure that Guidance Marine trained operators will already be familiar with controls.

RadaScan•View

Positioning Technology From GUIDANCE

Real time situational awareness for DP Operators

The RadaScan View sensor combines all the features of the RadaScan system with a traditional radar image on a single user interface.

The sensor accurately measures the range and bearing of one or more intelligent microwave targets called responders, allowing for the calculation of vessel position and heading. Based on radar technology it overcomes many of the limitations associated with DGPS, traditional laser, acoustic and taut-wire systems.

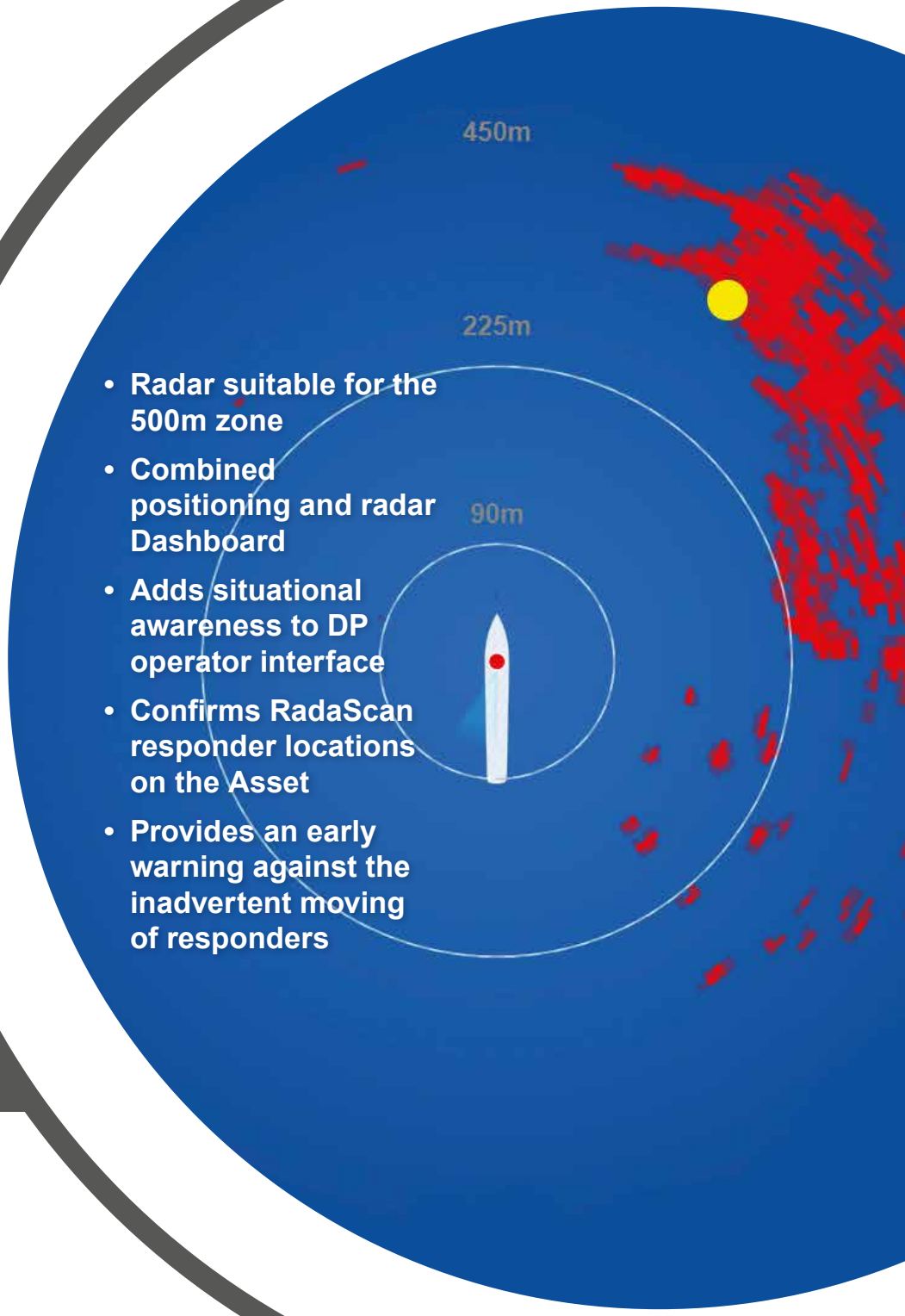
Applications

The RadaScan View sensor is suitable for applications which use fixed structures such as:

- Platform and Offshore supply
- Wind farms servicing
- Accommodation barge operation
- Crew boats station-keeping
- Heavy lift activities
- Dive and ROV support

The RadaScan View sensor is also suitable for applications with mobile structures such as:

- Track and ship-follow
- Shuttle tanker loading
- Pipe and cable laying
- Rock dumping
- Replenishment at sea



Delivering the future in dynamic positioning with consistently accurate products.

The RadaScan View System

The RadaScan View system has three main components:

1.

RadaScan Responders

One or more uniquely coded responders allow for safe and reliable tracking are mounted on the fixed platform or mobile structure

2.

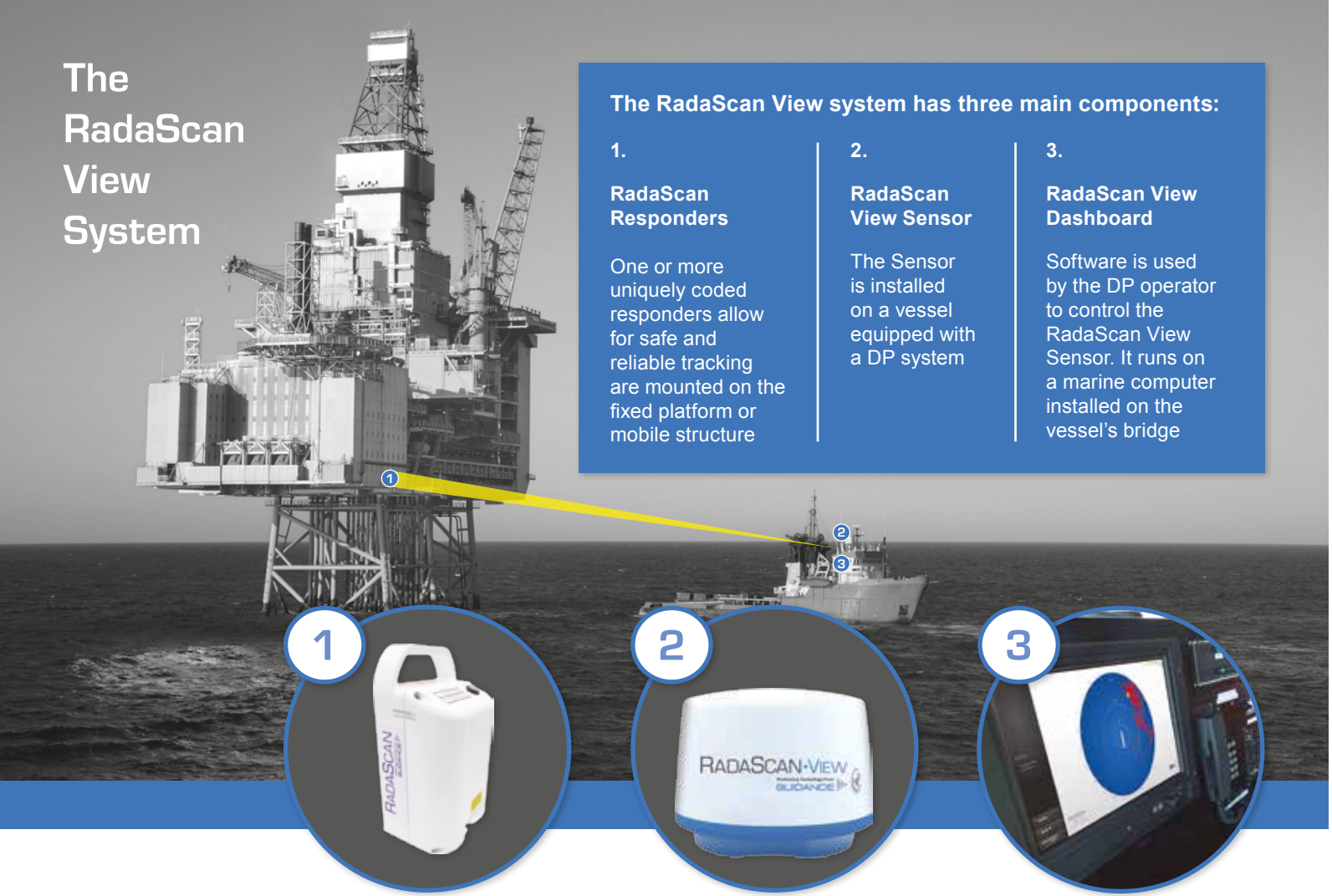
RadaScan View Sensor

The Sensor is installed on a vessel equipped with a DP system

3.

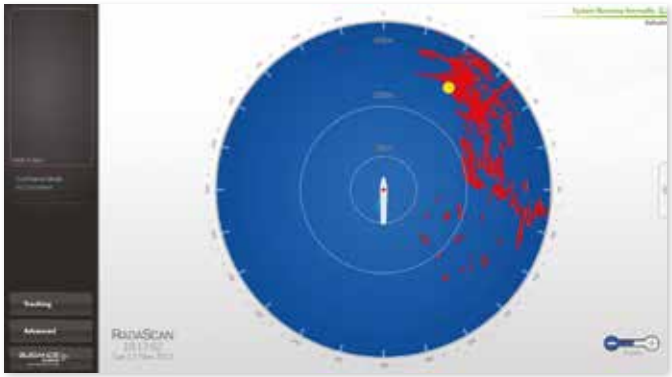
RadaScan View Dashboard

Software is used by the DP operator to control the RadaScan View Sensor. It runs on a marine computer installed on the vessel's bridge



Unique Features

- Provides the kind of positional accuracy usually associated with laser or DGPS
- Operates through rain, snow, fog, steam and dust in temperatures ranging from -25°C to +55°C
- Uses coded responders making the system immune to false reflections
- Unaffected by the GPS/DGPS signal shadow when working close to platforms
- Multi-vessel Capability - each responder can be used simultaneously by any number of vessels
- All targets are CSA and ATEX certified as intrinsically safe for use in hazardous offshore environments
- Fully compatible with all modern DP systems
- Easy upgrade options in the field via USB key or optional remote access



RadaScan View Dashboard

RadaScan View Dashboard's clear display and intuitive user interface enables DP operators to use RadaScan View sensor safely and effectively.

The RadaScan Dashboard is a state of the art solution to the control of the RadaScan View sensor.

The same user interface philosophy is used on our CyScan and Artemis systems, helping to make sure that Guidance Marine trained operators will already be familiar with controls.

Situational Awareness

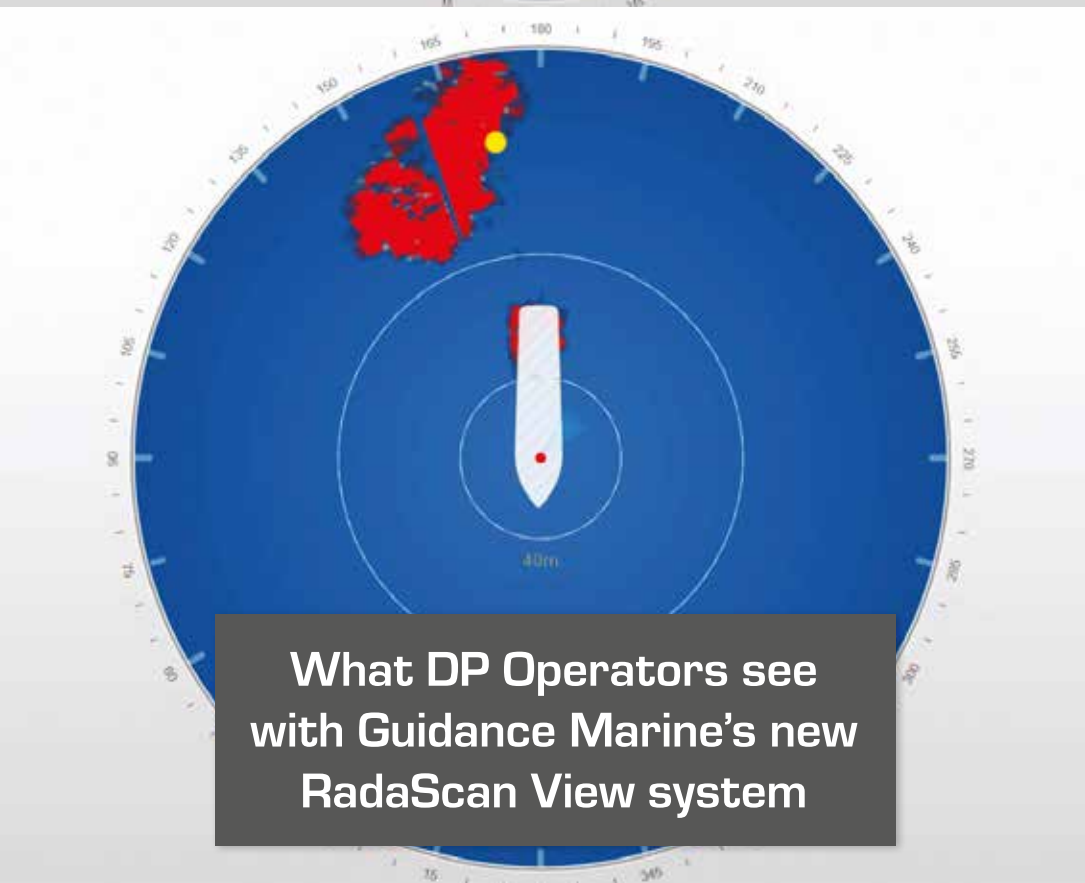
An evolution of Guidance Marine's RadaScan technology, the RadaScan View system is a combined position reference sensor and navigation radar. Currently traditional position references offer a limited view of the 'real world' environment. As today's operations become more and more complex, providing situational awareness to an operator can help prevent an incident by providing early warning, and allowing more time to correct a potential issue.

Current position reference user interfaces only show the positions of the targets that have been detected. The RadaScan View system allows confirmation of responder locations on the asset as well as providing the ability to monitor for the inadvertent moving of responders. Where assets require the vessel's high power navigational radar to be turned off in the 500m zone, the RadaScan View sensor enables vessel approach to assets to be carried out with more confidence.

With the RadaScan View sensor, Guidance Marine has enhanced the traditional referential DP sensor to provide additional situational awareness directly at the DP Operators' station.

Real world conditions

What DP Operators currently see



What DP Operators see with Guidance Marine's new RadaScan View system

RESPONDERS

Positioning Technology From GUIDANCE

Track with confidence and accuracy, when you need it most

RadaScan and RadaScan View sensors operate with a variety of intelligent microwave radar targets called responders. The sensor accurately measures the range and bearing to the reference responder(s) to allow the calculation of relative position and heading.

Responders add a unique digital ID code ensuring robust detection. Multiple vessel sensors can use the same responder(s) giving true operational flexibility. Responders are available with different power and a mounting option.

- **Compatible with all RadaScan family sensors**
- **ATEX and CSA certified**
- **All weather operation**
- **Unique coded ID**
- **Auto target detection**
- **Single or multiple responder capability**
- **Various power options**

ATEX Regulations

ATEX certified responders and primary cell packs may be:

- Used in zones 0, 1 or 2 with flammable gases
- Used in the presence of flammable gases with vapour apparatus group IIB or IIA and with temperature classes T1, T2, T3 and T4

Section	Code
EX Equipment Group, Category & Environment	II 1G
Type of Protection	Ex ia
Gas Group	IIB
Temperature Class	T4
Equipment Protection Level	Ga
Temperature Range	-40°C to +55°C
Mains Powered Temperature Range	-40°C to +47°C

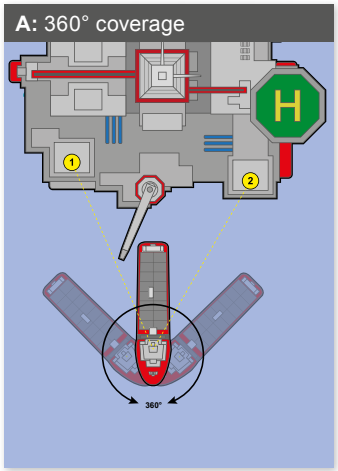
QUALITY ASSURED 3 YEAR WARRANTY See our standard terms of sale

Delivering the future in dynamic positioning with consistently accurate products.

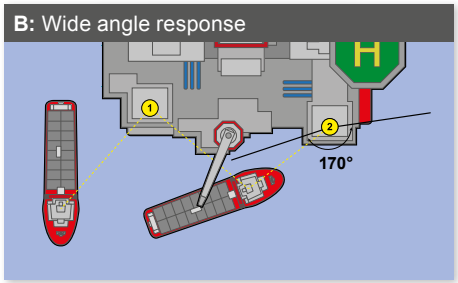
- Dimensions - 480 x 380 x 210mm (boxed) (l x w x d)
- Weight - 10kg (boxed)

All variants are CSA and ATEX certified as intrinsically safe and are suitable for use in hazardous environments.

Using multiple coloured responders overcomes the problems of spatial separation required by other systems.



The RadaScan sensor's rotating antenna transmits a beam of radio energy and detects the returned signal. Unlike conventional radar, the RadaScan sensor ignores the 'clutter' typically reflected by an offshore platform, and only 'sees' the returns from responders.



Each responder adds its own unique ID to the returned signal, enabling the sensor to distinguish between multiple responders. The sensor's continuous 360° rotational scan maintains target-lock during vessel turns, without the need to reset the sensor. This enables the RadaScan sensor to be used 'hands free', even during the most critical part of a manoeuvre.

For added redundancy and precise heading control, the RadaScan sensor can lock onto two responders simultaneously. Every responder can be used simultaneously by any number of RadaScan equipped vessels.

Power Options

Rechargeable

Under normal conditions with a fully charged battery, the rechargeable responder will operate continuously for up to 22 days before it needs recharging. Typically used by vessels holding their own responder. Also used on assets where the responder has very favourable access and is frequently visited by personnel to facilitate a recharge. The integrated LED switch indicates how much life the battery has left before a recharge is needed.

Light solidly on	Up to 22 days left
1 flash in 5 seconds	Up to 10 days left
3 flashes in 5 seconds	Up to 1 day left

Mains Powered

The wired responder can be powered via an intrinsically safe 5V to 30V DC supply, maximum current 400mA and maximum power output 1.2W. Typically used where access is poor and mains power is within acceptable distance to the installed responder.

Primary Cell Pack

The primary cell pack has a nominal 24/7 use expected life-time of 12 months under average temperature conditions. Mostly deployed on assets in remote locations that are not frequently visited by personnel. The integrated LED provides an indication of remaining battery life.

1 flash in 5 seconds	PCP batteries normal
3 flashes in 5 seconds	PCP batteries low

Mounting Options

Guidance Marine provide a universal swivel bracket which is suitable for all responder power and installation options. The bracket is ideal for locations which require maximum flexibility.

Type	Power	Installation
Rechargeable	22 days	Can be installed in a fixed location or can be used for temporary projects.
Primary Cell Pack (external battery pack)	12 months	Recommend areas where mains power is unreachable or not an option
Mains Powered	Intrinsically safe 5V to 30V DC	Can be installed in an unmanned location.

RANGEGUARD

Positioning Technology From GUIDANCE

Marine Proximity Sensor

The RangeGuard sensor measures the distance to the nearest object. Based on radar technology, it is a plug and play proximity sensor to detect unseen objects for vessel protection.

- **Detects objects within 300m**
- **All weather operation**
- **No moving parts**
- **Targetless operation**
- **Spot or flood beam width options**

Markets

The RangeGuard sensor is suitable for mobile and fixed structures such as:

- Platform supply vessels
- Offshore and wind farm support
- Tugboats
- Salvage vessels

Service & Warranty

Supported by Guidance Marine's international network of service centres, The RangeGuard sensor is supplied by Guidance Marine with a 3 year warranty – the longest warranty from any supplier.

QUALITY ASSURED 3 YEAR WARRANTY
See our standard terms of sale

Delivering the future in dynamic positioning with consistently accurate products.

RangeGuard User Interface

The RangeGuard User Interface has been logically structured and carefully designed to provide an intuitive interface that maximises the opportunities of multi-touch user control and touch screen technology. Features include:

- **Clear and simple numeric display of range and speed data**
- **Range detection of object without microwave reference target**
- **Selectable Birds Eye View display**
- **Day/night mode display**
- **Touch screen capable**
- **Wireless and multi-screen capability via web browser interface**
- **Minimum range cut-off filtering**
- **Low power microwave device**

RangeGuard Sensor

Control Unit

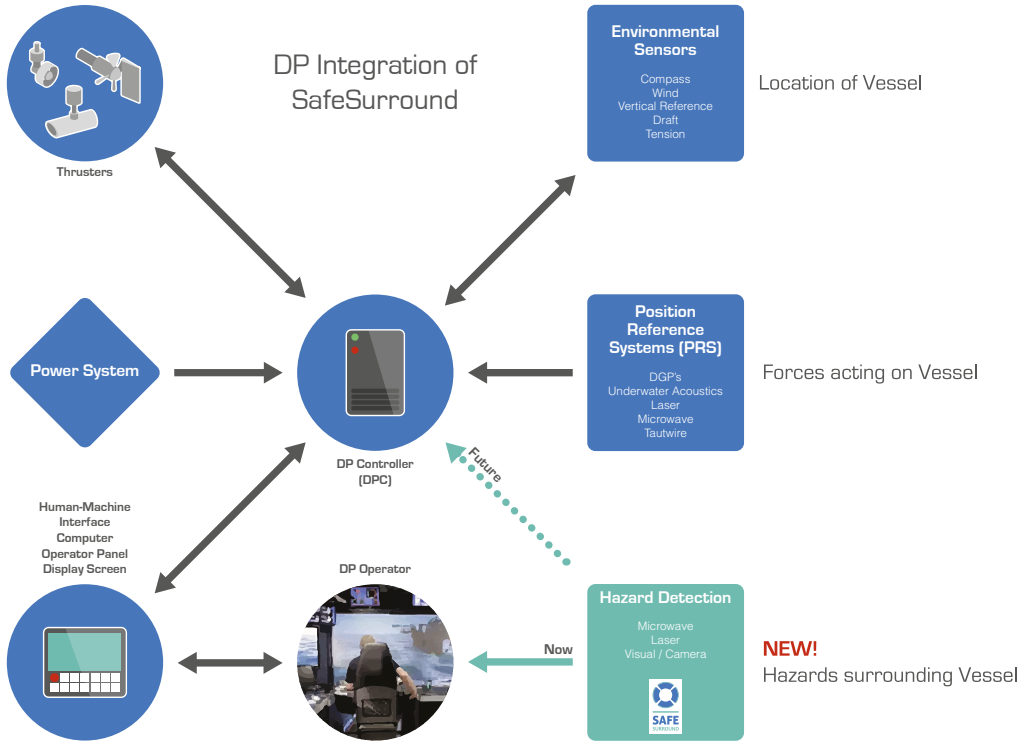
SafeSurround Hazard Detection Sensors

A breakthrough in vessel and asset safety - delivered through our RangeGuard® products

SafeSurround consists of four RangeGuard sensors - two stern mounted (port and starboard) and on a single mount two at the bow. Additional bridge protection can be fitted to protect against high level hazards. Like a vehicle parking sensor SafeSurround provides alarms to alert the marine of oncoming hazards. The SafeSurround software allows appropriate distance and speed of approach warning limits to be set according to the vessel and the operation.

With collisions becoming more frequent within the 500m zone, SafeSurround offers a simple, low cost response for vessel owners seeking to take proactive mitigating action and keep their vessel on contract. The system is DP ready for those DP Integrators developing Hazard Detection DP inputs. Currently the system works as an independent stand-alone bridge alarm.

Installation is made simple with minimal penetrations and integral software automatically deployed direct for the sensor.



Artemis Mk6 Specification

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**			

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

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

Power Requirements	
Supply voltage	230VAC 50/60Hz, 2A
Power consumption	375W

Environmental	
Operating Temperature Range	25°C to +55°C
Atmospheric Conditions	Operates in fog, heavy rain, snow and ice conditions
Standards Compliance	EN 60945, FCC Approved
Ingress Protection Rating	IP66
RF Immunity	Resistant to S and X band Radar when installed as recommended

Connections	
Power supply cable	3 x 1.5mm² with screen; outside diameter 7 – 13mm
Sensor Control	1 x Ethernet 1--Base-T
Keypad cable	STP (Shielded Twisted Pair) outside diameter 4.5 – 10mm
Overall absolute accuracy	0.02° standard deviation

Sensor Weights and Dimensions	
Antenna	1248 x 206 x 176.5mm/approx. 5kg
Antenna Unit	Ø 366 x 500mm/30kg
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)

Beacon

General Specifications			
Frequency band			
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	230 VAC, 50/60 Hz	230 VAC, 50/60 Hz	230 VAC, 50/60 Hz

Artemis Validator

Sensor Details	
Frequency band	9200 – 9300MHz
Atmospheric Conditions	Operates in fog, heavy rain, snow and ice conditions
Ingress Protection Rating	IP67
Power Requirement	86-264VAC 50/60Hz 1A
RF Immunity	Resistant to S and X band Radar when installed as recommended
Weight	4.5kg
Dimensions	120 x 220 x 340mm

CyScan Specification

Sensor Details

Laser Type	Pulsed (30kHz) laser diode
Laser Classification	Eye safe Class 1
Operating Range (nominal)	10m to 2500m (target type/environment dependent)
Range Resolution	8.5mm (<30ps time of flight)
Angular Resolution	(typical) 0.012° (0.2mrad)
Levelling Optics	Single active axis
Beam Shape (nominal)	12° vertical, 0.13° horizontal
Tilt Compensation	-20° to +20° roll and pitch
Total Vertical Angular Coverage	52° (mechanical + optical)
Wave Motion Compensation	(typical) ±5 for 5s wave period
Chart Range Precision*	< +- 100mm *Available to special order.

Target Details

Target Type Typical Range	1.9m cylindrical 10m to 400m 2m flat 10m to 500m
Extended Operating Range	

Vessel Interface

Power Requirement	85-264VAC, 45-65Hz, max 100W, 1.5A
Sensor Control and DP Feed I/O	2 x RS422 + 2 x Ethernet 100Base-T Auto MDI/X
Supported DP Systems	Includes Beier Radio, GE Energy, (Converteam), Kongsberg, Marine Technologies, Navis, Praxis, Rolls Royce and Wärtsilä (L-3)
Supported DP System Configurations	Serial Console (single) with Serial DP (single) Ethernet Console (master & slaves) with Serial DP (single, dual)
Supported DP Telegram Formats	NMEA0183R, NMEA0183P, ASCII17, MDL standard (single & multi target), BCD, Artemis, Marine Technologies and Rolls Royce custom strings

Environmental

Operating Temperature Range	-25°C to +55°C (-40°C XT option available)
Standards Compliance	CE Certified, EN 60945, FCC Approved, IMO Resolution A962 (23) 'GREEN PASSPORT'
Marine Type Approval	ABS, DNV GL, Lloyds Register, Russian Maritime Register of Shipping
Ingress Protection Rating	IP66

Sensor Weight & Dimensions

Width	405mm
Depth	407mm
Height	456mm
Weight	25kg

Flight Case Weight & Dimensions

System Dimensions	680 x 570 x 780mm
System Weight	61kg (with typical accessories such as computer, monitor and mouse)

TYPE APPOVED PRODUCT

RadaScan Specification

Sensor Details	
Transceiver Type	Frequency Modulated Continuous Wave (FMCW)
Frequency Band	9.2 to 9.3 GHz
Maximum Power Output	1W
Maximum Operating Range*	1000m
Range Accuracy**	0.25m (1σ) up to 600m 0.5m (1σ) up to 1000m
Angular Accuracy**	0.15° (1σ) up to 600m 0.2° (1σ) up to 1000m
Operating Field of View	360°
Target Detection	Automatic
Vertical Beam Width	+/- 12°, +35° at close range
Multiple Target Capability	Yes

Vessel Interface	
Sensor Power	90 to 260VAC 45-65Hz. 80W operation, 120W at power-up
Sensor Control	1 x Ethernet 100Base-T
Sensor DP Feed	1 x RS422
Supported DP Systems	Includes Beier Radio, GE Energy (Converteam), Kongsberg, Marine Technologies, Navis, Praxis and Rolls Royce and Wärtsilä (L-3)
Sensor Control	Up to 10 control consoles (Master & Slaves)
Sensor Control Protocol	Ethernet TCP/IP
Supported DP Telegram Formats	Includes standard formats (including MDL single/multi-target and NMEA0138) and customer formats

Environmental	
Operating Temperature Range	-25°C to +55°C (-40°C XT option available)
Atmospheric Conditions	Operates in fog, heavy rain, snow and ice conditions
Standards Compliance	CE Certified, EN 60945, FCC Approved, IMO Resolution A962 (23) 'GREEN PASSPORT'
Ingress Protection Rating	IP66
RF Immunity	Resistant to S and X band Radar when installed as recommended

Sensor Weight & Dimensions	
Diameter	1200mm
Height	900mm
Weight	115kg

Flight Case Weight & Dimensions	
System Dimensions	1330 x 1330 x 1100mm
System Weight	212kg (with typical accessories such as computer, monitor, keyboard and mouse)

Responder Specification

Sensor Details – Mains, Rechargeable and Primary Cell Pack	
Type	Active
Operating Temperature Range	-40°C to +55°C
Standards Compliance	CSA approved CLASS 2258 83 Class I, Div. 1, Groups C and D: Class I, Zone 0, AEx ia IIB T4 Ga: ATEX certified CLASS 2258 83 Class I, Div. 1, Groups C and D: Class I, Zone 0, AEx ia IIB T4 Ga:
Azimuth Response	170°
Elevation Response	+/-35°
Power	Battery or mains
Battery Life	12 months fixed cell, 3 weeks rechargeable cell
Dimensions	170 x 305 x 128mm
Weight	3.8kg (Rechargeable), 3.2kg (Mains/Primary)

*Operating ranges measured with part number 20-0090-4 RadaScan sensor

**Accuracy is defined as a measurement of repeatability. Data obtained from various worldwide locations in different sea states, locations include the North Sea and Gulf of Mexico.

RadaScan View Specification

Sensor Details	
Transceiver Type	Frequency Modulated Continuous Wave (FMCW)
Frequency Band	9.2 to 9.3 GHz
Maximum Power Output	1W
Maximum Operating Range*	600m
Minimum Operating Range	10m
Range Accuracy**	0.25m (1σ) up to 600m
Angular Accuracy**	0.2° (1σ) up to 600m
Operating Field of View	360°
Target Detection	Automatic
Vertical Beam Height	22°
Multiple Target Capability	Up to 4 (with version 3.0 sensor software installed)

Vessel Interface	
Sensor Power	85 to 264VAC 45-65Hz, 5A
Sensor Control	2 x Ethernet 100Base-T
Sensor DP Feed	1 x RS422
Supported DP Systems	Includes Beier Radio, GE Energy (Converteam), Kongsberg, Marine Technologies, Navis, Praxis, Rolls Royce and Wärtsilä (L-3)
Sensor Control	Up to 9 control consoles (Master & Slaves)
Sensor Control Protocol	Ethernet TCP/IP
Supported DP Telegram Formats	Includes MDL single/multi-target and NMEA 0183 to IEC 61162-1:2010(E). Custom formats also available on application

Environmental	
Operating Temperature Range	-25°C to +55°C
Atmospheric Conditions	Operates in fog, heavy rain, snow and ice conditions
Standards Compliance	CE Certified, EN 60945, FCC Approved, IMO Resolution A962 (23) 'GREEN PASSPORT'
Ingress Protection Rating	IP66
RF Immunity	Resistant to S and X band Radar when installed as recommended

Sensor Weight & Dimensions	
Diameter	500mm
Height	400mm
Weight	21kg

Flight Case Weight & Dimensions	
System Dimensions	620 x 620 x 730 mm
System Weight	63kg (with typical accessories such as computer, monitor, keyboard and mouse)

* Operating ranges measured with part number 20-0226-1 RadaScan View Sensor

** Accuracy is defined as a measurement of repeatability. Data obtained from various worldwide locations in different sea states, locations include the North Sea and Gulf of Mexico.

RangeGuard Specification

Details	
Transceiver Type	Frequency Modulated Continuous Wave (FMCW)
Frequency Band	24.05GHz – 24.25GHz (Licence Exempt Short Range Device)
Maximum Power Output	<100mW EIRP
Maximum Operating Range	300m
Minimum Operating Range	1m
Range Accuracy	±2cm + 0.1% of Range
Azimuth Beam width	110˚(flood) or 11˚(spot) 10dB Width
Target Detection	Automatic or by manual selection
Vertical Beam Height	+/- 5.5°

Vessel Interface	
Sensor Power	85 to 264VAC 45-65Hz 5A, Max 114W
Sensor Control	Sensor Control capable of displaying 4 sensors simultaneously
Sensor Control Protocol	Ethernet from controlling computer or remotely via web browser

Environmental	
Operating Temperature Range	-25°C to +55°C
Atmospheric Conditions	Operates in fog, heavy rain, snow and ice conditions
Standards Compliance	EN 60945
Ingress Protection Rating	IP67
RF Immunity	Resistant to S and X band Radar when installed as recommended

Sensor and Control Unit Weight and Dimensions	
Height	285mm
Width	170mm
Depth	120mm
Weight	4kg
Max Cable run per sensor	Up to 100m (CAT5e SCTP cable, Min AWG 24)
Control Unit	400 x 250 x 10mm

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