RADius

KONGSBERG

HIGH PRECISION POSITION REFERENCE AND TRACKING SYSTEM

RADius is developed for applications in need of a robust and reliable relative positioning system. Many applications can benefit from RADius in operations, as there are different types of retroreflective transponders, and different types of installation of the sensor heads, Interrogators.

Innovative technology
The implementation is fully solid state and based on measurements of reflected radar signals from a number of passive transponders in the nearby area. Each reflected signal is mixed with a unique ID to separate different targets from each other. Advanced signal processing allows for simultaneous and continuous measurements to any practical number of transponders. RADius is designed for multiple users leveraging the same transponders simultaneously.

Multiple sensor heads
RADius can be deployed as an omni directional system utilising four sensor heads, which can be placed on suitable locations on the vessel, dependent on the construction and operation. This provides full 360˚ signal acquisition as well as avoidance of blind angles, as there will be a sensor head at a receiving angle to transponders at all times, regardless of the vessel's relative position to the RADius transponder.

Signal processing will effectively remove possible interference with other transmitting devices in the same frequency band. Accurate Doppler measurements allow for rapid and reliable determination of relative velocities between the maneuvering vessel and transponders.

Operational features
RADius is capable of detecting and measuring accurate range and bearing to any transponder within the range of up to 550 metres, dependant on the targets transponders. The direction from the interrogator to each transponder is accurately determined by the use of interferometric methods.

Ease-of-use HMI
RADius features a highly intuitive touch-ready HMI developed in close co-operation with experienced DP operators. This HMI enables the operators to assess the quality of their positioning quickly and effectively during operation. For better visibility under different light conditions, the operator can easily select between a set of colour palettes, including a well proven night display.

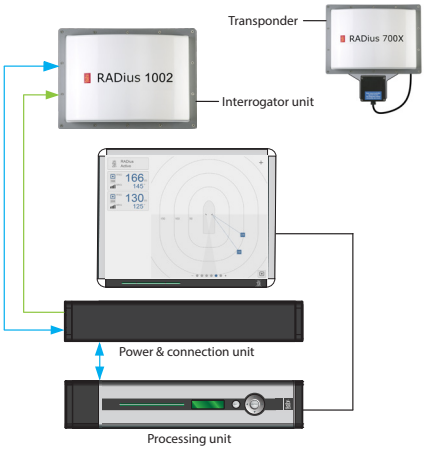
Autodetecting transponders
Search and identification of transponders is easily done with the autosearch utility. Transponders are automatically detected and shown in the operator view.

Wide opening angles
RADius has a vertical and horizontal opening angle of 90°. This secures stabile operations in close-by operations where the difference in height for the mounted transponder and interrogator can be considerable. Hence, it is not necessary to tilt the sensor head in any direction to obtain a signal.

A variety of transponders
Retroreflective transponders are mounted on the target which is to be approached. A variety of transponders are available, suitable for any operation that demands a robust and reliable relative positioning solution.

FEATURES RADius

- Multiple sensor heads
- Autodetection of transponders
- Measuring and output of range and bearing
- Wide opening angles secure close-by operations
- No moving parts
- Multi user feasibility
- Multiple transponder capability
- Operates in all weather conditions, also extreme cold
- Complementary to existing GNSS reference systems
- Designed to meet all IMO DP Class requirements
- Both battery and fixed power operated transponders
- Operates in license free radio band
- ATEX and IECEx certified transponders
- Easy to deploy and adapt



TECHNICAL SPECIFICATIONS

PERFORMANCE

DP range (depending on transponder type)	Up to 550 m
Range accuracy[1]	0.25 m (1 σ)
Angle accuracy[1]	0.25° (1 σ)
Update frequency rate	5 Hz
Latency	< 0.5 sec.
Vertical opening angle	± 45°
Horizontal opening angle	± 50°
Operating frequency band	5.51 to 5.61 GHz

INTERFACES

RADius Processing Unit

Serial ports	6 x RS-422/RS-232 (isolated)
Ethernet/LAN	4, 1 in front, 3 in rear
USB	3, 1 in front, 2 in rear

DATA OUTPUTS

RADius Processing Unit

Message types	PSXRAD, ABBDP, Artemis, Fanbeam BCD / MDL NMEA VER, DDC

WEIGHTS AND DIMENSIONS

RADius 1002 Interrogator Unit	8.5 kg, 412 x 562 x 214 mm
RADius Processing Unit	5.4 kg, 88 x 485 x 412 mm
Power and Connection Unit	6.85 kg, 88 x 482 x 535 mm

POWER SPECIFICATIONS

RADius 1002 Interrogator Unit	48 V DC ±10 %, max. 70 W
RADius Processing Unit	100 to 240 V AC, 50/60 Hz max. 60 W
Power and Connection Unit	100 to 240 V AC, 150 W standard, 230 W triple, 310 W quad

RADius 1002 Interrogator Unit

Operating temperatur range	-40 °C to +55 °C
Storage temperature range	-25 °C to +70 °C
Operating humidity	100 %
Storage humidity	Max. 60 %
Enclosure protection	IP 66

RADius Processing Unit

Operating temperatur range	-15 °C to +55 °C
Storage temperature range[2]	-20 °C to +70 °C
Operating humidity	Max. 95 % non-condensing
Storage humidity	Less than 55 %
Enclosure protection	Front IP 42, rear IP 21

Power and Connection Unit

Operating temperatur range	-15 °C to +55 °C
Storage temperature range	-20 °C to +70 °C
Operating humidity	Max. 95 % non-condensing
Storage humidity	Less than 55 %
Enclosure protection	Front IP 42, rear IP 21

Mechanical

Vibration, all units	IEC 60945/EN 60945

Electromagnetic compatibility

Compliance to EMCD, immunity/emission	IEC 60945/EN 60945

PRODUCT SAFETY

Compliance to LVD, standard used	IEC 60950/EN 60950

RADius TRANSPONDERS

Refer to their respective datasheets for more information.

ENVIRONMENTAL SPECIFICATIONS

1 *All accuracy spesifications are based on real-life tests conducted in the North Sea under various conditions. Operation on other locations under different conditions may produce different results.*

2 *Recommended long term storage temp. between +5 °C to +35 °C*

Specifications subject to change without any further notice.

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