

RADIUS



KONGSBERG



HIGH PRECISION POSITION REFERENCE AND TRACKING SYSTEM

RADius is based on radar principles and the system is developed for DP applications in need of robust and reliable relative positioning. It is a fully solid state system with low maintenance costs.

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. These can be placed on suitable locations on the vessel, depending 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, depending 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 100°. This secures stable manoeuvring 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.

TECHNICAL SPECIFICATIONS

RADIUS

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 | 412 x 562 x 214 mm 8.5 kg |
| RADius Processing Unit | 88 x 485 x 357 mm 5.4 kg |
| RADius power supply | 88 x 485 x 335 mm 6.4 kg |

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 |
| RADius power supply | 110 to 240 V AC, supplies up to 4 Interrogator Units |

¹ All accuracy specifications 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.

ENVIRONMENTAL SPECIFICATIONS

RADius 1002 Interrogator Unit

| | |
|-----------------------------|------------------|
| Operating temperature 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 temperature 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 |

RADius power supply

| | |
|-----------------------------|--------------------------|
| Operating temperature 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 |
|----------------------|--------------------|

Regulatory

| | |
|---|------------|
| Compliance to Radio Equipment Directive (RED) | 2014/53/EU |
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RADius TRANSPONDERS

Refer to their respective datasheets for more information.

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

Specifications subject to change without any further notice.

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