

RESPONDERS

USER'S GUIDE



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

T: +44 116 229 2600 E: sales.wgm@wartsila.com

www.guidance.eu.com
www.marine.direct
www.wartsila.com



Serial No:

Sensor Software Version:

Client Software Version:

Date of Shipment from UK:

Wärtsilä Guidance Marine Ltd,
5 Tiber Way,
Meridian Business Park,
Leicester,
LE19 1QP
United Kingdom

T: +44 116 229 2600

UK Support: +44 116 229 2665
(365 days a year; 08:00 - 20:00 UTC)

USA Support: +1 504 305-1120

Asia Support: +65 6734 6365

customerservices.wgm@wartsila.com

W: www.guidance.eu.com/customer-support



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Document History

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94-0649-A	First release of Responder User's Guide	05/03/2020

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Series 3 and 4 Responders can be used with RadaScan and RadaScan View systems. One or more Responders should be mounted on the target platform or vessel.

There are three models of RadaScan Series 3 Responder:

- Rechargeable (Part No. 20-0189-2)
- Primary Cell Responder (Part No. 20-0194-2)
- ISPP Powered (Part No. 20-0195-2)
- Primary Cell Pack (Part No. 21-0375-1)

The ISPP Powered Responder is used with Series 3 and 4 ISPP Responder Power Supply (Part No. 21-0377-2).

There are three models of RadaScan Series 4 Responder:

- Rechargeable Responder (Part No. 20-0276)
- Primary Cell Pack Responder (Part No. 20-0284)
- ISPP Responder (Part No. 20-0286)
- Primary Cell Pack (Part No. 21-0505)

The Series 3 and Series 4 Primary Cell Responders are powered by different Primary Cell Packs (Part No. 21-0375-1 - Series 3 | Part No. 21-0505 - Series 4). This requires battery replacement as routine maintenance. This should be undertaken by Wärtsilä Guidance Marine, or by a suitably qualified service technician.

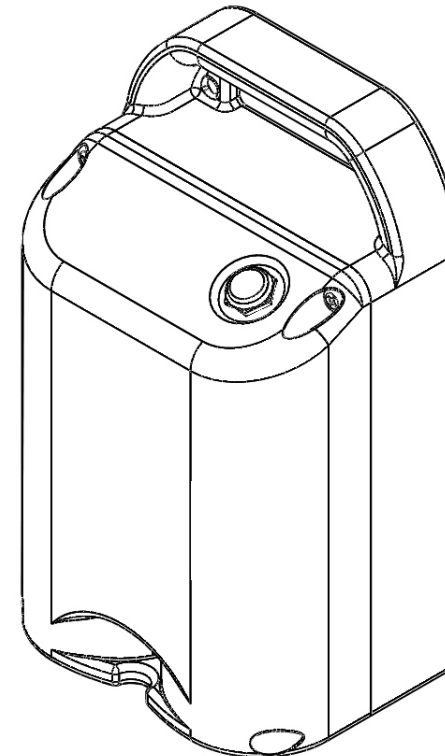
!Do not open the Responder. It should only be serviced by Wärtsilä Guidance Marine service technician.

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

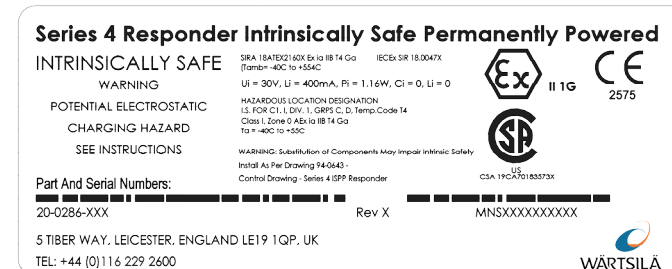
Wärtsilä Guidance Marine Ltd,
5 Tiber Way,
Meridian Business Park,
Leicester,
LE19 1QP,
United Kingdom

Tel: +44 (0)116 229 2665

Email: customerservices.wgm@wartsila.com



RadaScan Responder



ATEX Certification
Label (for illustration
purposes only -
actual label may be
formatted differently)

Instructions for Safe Selection, Installation, Use, Maintenance, Repair and Transport

User instructions (in compliance with ATEX 94/9/EC Directive)

Unit	Part No.	Temperature Range	ATEX Certification No.
Series 3			
Rechargeable	20-0189-2	-40°C to +55°C	SIRA 15ATEX2015X
Mains Powered	20-0195-2	-40°C to +47°C	SIRA 15ATEX2047X
Primary Cell Responder	20-0194-2	-40°C to +55°C	SIRA 15ATEX2048X
Primary Cell Pack	21-0375-1	-40°C to +55°C	SIRA 15ATEX2048X
Series 4			
Rechargeable	20-0276	-40°C to +55°C	SIRA 18ATEX2160X
Intrinsically Safe Permanently Powered	20-0286	-40°C to +55°C	SIRA 18ATEX2160X
Primary Cell Responder	20-0284	-40°C to +55°C	SIRA 18ATEX2160X
Series 4 Primary Cell Pack	21-0505	-40°C to +55°C	SIRA 18ATEX2160X

Use in Hazardous Environments

- Series 3 and 4 Responders and primary cell packs may be used in zones 0, 1 or 2 with flammable gases.
- All Series 3 and 4 Responders and primary cell packs may be used in the presence of flammable gases and vapours with gas group IIB and with temperature class T4.
- The equipment is certified for use in ambient temperatures in the applicable range shown above and should not be used outside this range.

Installation and Maintenance

- Responders must be installed by suitably trained personnel in accordance with the applicable code of practice (typically IEC EN 60079-14).
- Responders must be inspected regularly by suitably trained personnel in accordance with the applicable code of practice to ensure they are maintained in a satisfactory condition.
- Responders are not intended to be repaired by the user. They must only be repaired or serviced by Guidance Marine, or by an approved service representative of Wärtsilä Guidance Marine, in accordance with the applicable code of practice.

- Responders do not require assembly or dismantling. They do not contain any customer-replaceable parts, and no user adjustment is required.

Electrostatic Hazard

- Responders must not be installed where external conditions could cause an electrostatic build-up on their outer casing.
- The Responder's outer casing presents a static hazard and must only be cleaned using a damp cloth.

Corrosive Substances

- Responders should be protected from solvents, or acidic gases or liquids that may affect the integrity of the outer case.

Transport

- Responders must be transported in a suitable transit case.

FCC RF Exposure Safety Distance

- Unauthorized antennas, modifications, or attachments could damage the transmitter and may violate FCC regulations. To maintain compliance with the FCC's RF exposure guidelines, a distance of ≥ 20 cm must be maintained between this device and personnel.

Responder Colours

Each Responder uses one of four different modulation frequencies. These are characterised as colours: Red, Yellow, Green and Blue. The colour of a Responder is clearly marked on the outside of its case, and is shown next to its ID number on the Reflections and Extended Information panes of the Dashboard.

Tracking Mode Reflections Extended Information ?						
Range & Bearing Data						Reflections:
Type	Colour	ID	Range	Bearing	Visibility	
Reflection	Red	1159	27.7m	189.84°	97%	
Reflection	Green	1761	23.3m	216.21°	87%	

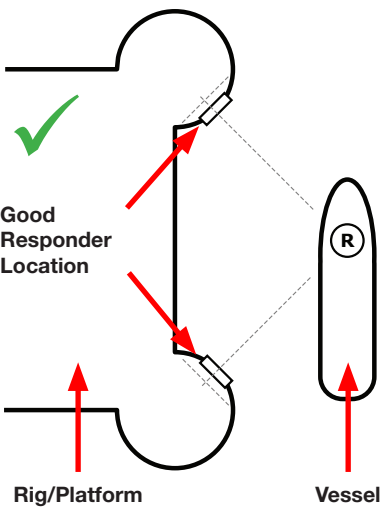
This scheme makes it easier for the RadaScan View system to separate the signal from one Responder from the signal from a Responder of a different colour. If you use more than one Responder at once, then for best results make sure that you use a different colour for each Responder.

The location, range and orientation of the Responders in relation to the Sensor have a significant effect on the tracking performance of the RadaScan View system, and hence on the quality of the position data sent to the DP system.

The RadaScan View system is based on radar technology. Metallic structures reflect the microwave beam transmitted by the sensor, and can cause multipath interference, where ghost images are reported by the system. However, this unwanted phenomenon can be prevented by carefully positioning the Responders according to the following guidelines:

Responders Should be Mounted:

- ✓ With a clear, unobstructed view towards the RadaScan View-equipped vessel.
- ✓ At a height no lower than two metres below the vessel-mounted Sensor.
- ✓ At a height no higher than five metres above the vessel-mounted Sensor.
- ✓ On outside corners of the rig or platform to minimise the amount of metallic structure around them.

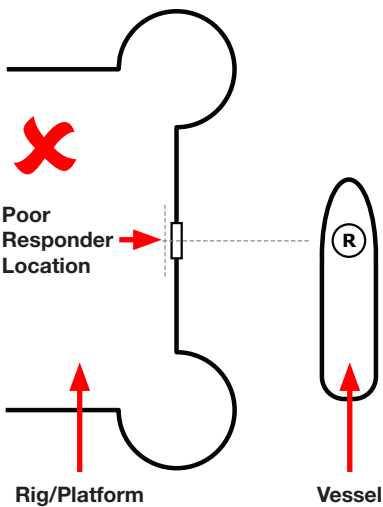


Good Location:

✓	Good angle of incidence
✓	Lower angle of elevation allows vessel to pick up Responder on approach
✓	Longer range aids performance in high sea states
✓	Usually clear of obstructions and away from enclosed corners
✓	Provides adequate cover during vessel manoeuvres

Responders Should NOT be Mounted:

- ✗ On inside corners.
- ✗ Below an overhang.
- ✗ On lower service decks below a main-deck overhang.
- ✗ Suspended from a lanyard or length of rope.



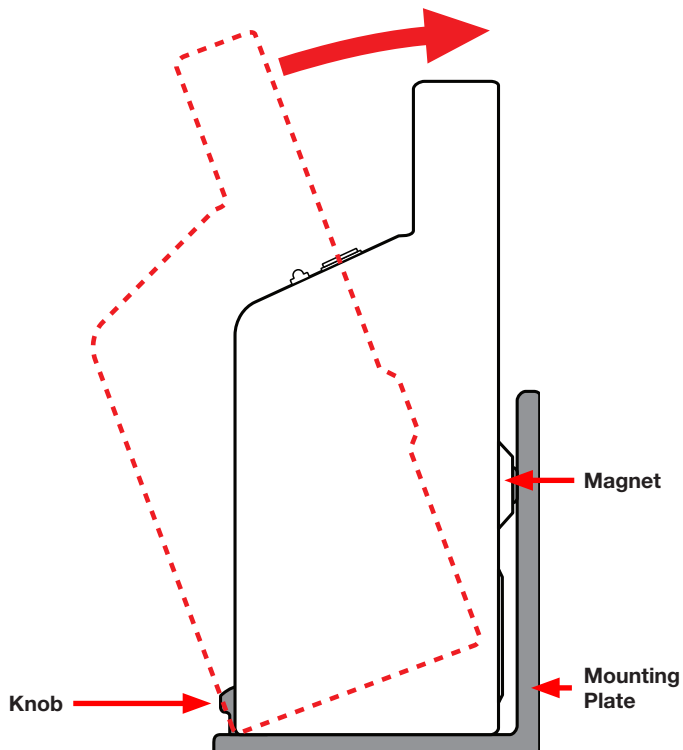
Poor Location:

✗	Good angle of incidence
✗	Steep angle of elevation prevents vessel from picking up Responder on approach
✗	Shorter range inhibits performance in high sea states
✗	Often surrounded by obstructions and radar-reflecting metalwork
✗	Does not provide adequate cover during all vessel manoeuvres

The Responder can be used with or without a swivel bracket, as long as it is mounted with its longest side vertical, and its carrying-handle at the top.

To Mount the Responder

1. Hook the foot of the Responder underneath the knob on the bottom of the mounting plate. (See below).
2. Rotate the Responder backwards until it is held in place by its magnet against the mounting plate.
3. (Optional) Attach safety lanyard onto the Responder and the swivel bracket or other fixture.

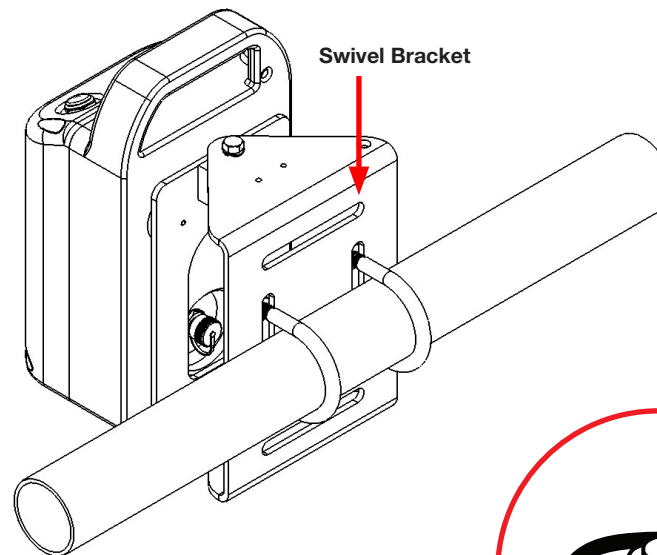


Swivel Bracket

The swivel bracket (Part No. 21-0328-1) should be used to point the Responder towards the RadaScan View Vessel's working area.

It can be mounted on either a horizontal or vertical bar:

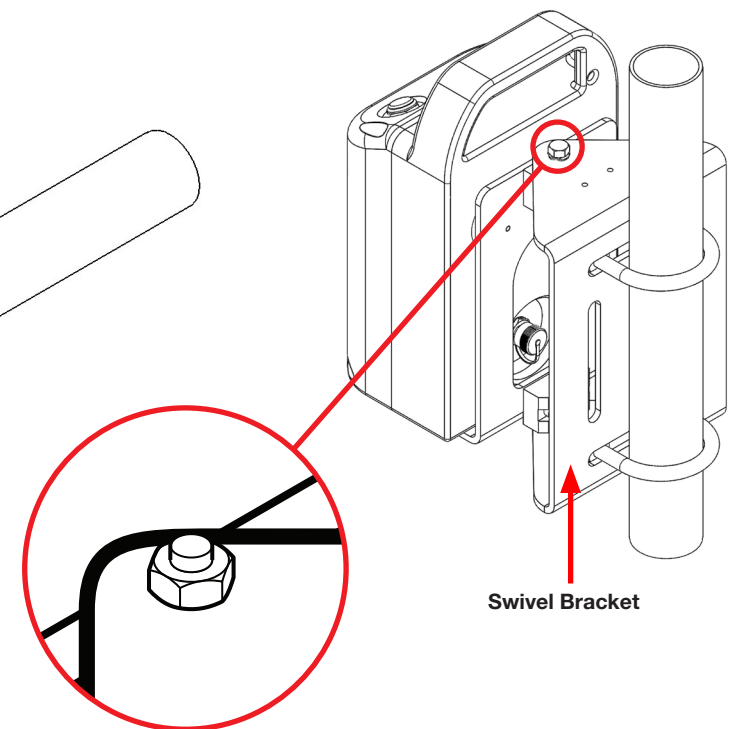
Mounting on Horizontal Bar

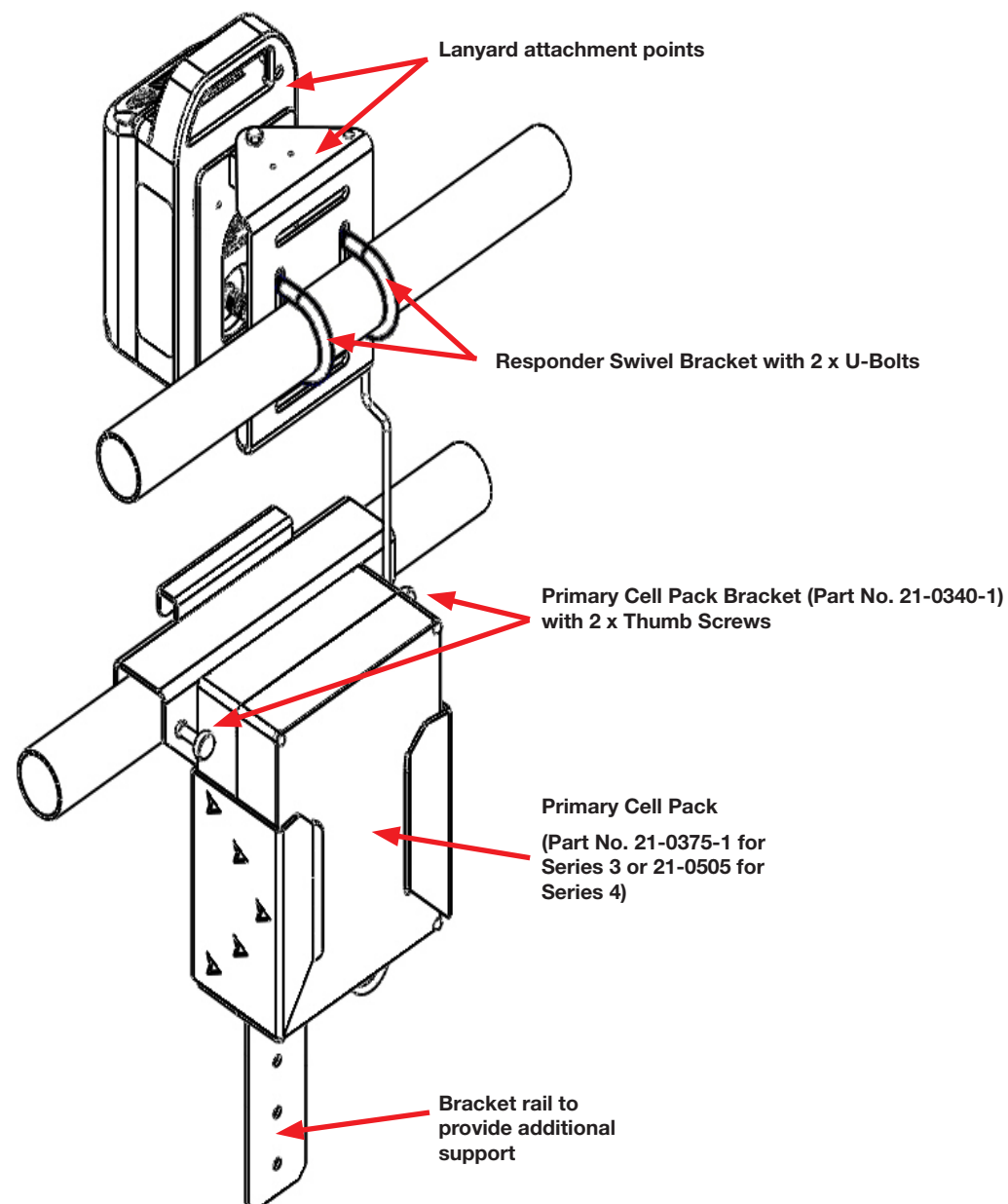


Loosen the nut to swivel the bracket in the required direction.

!Tighten the nut with a spanner to fix the bracket's position.

Mounting on Vertical Bar



Mounting a Primary Cell Responder with a Primary Cell Pack:

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

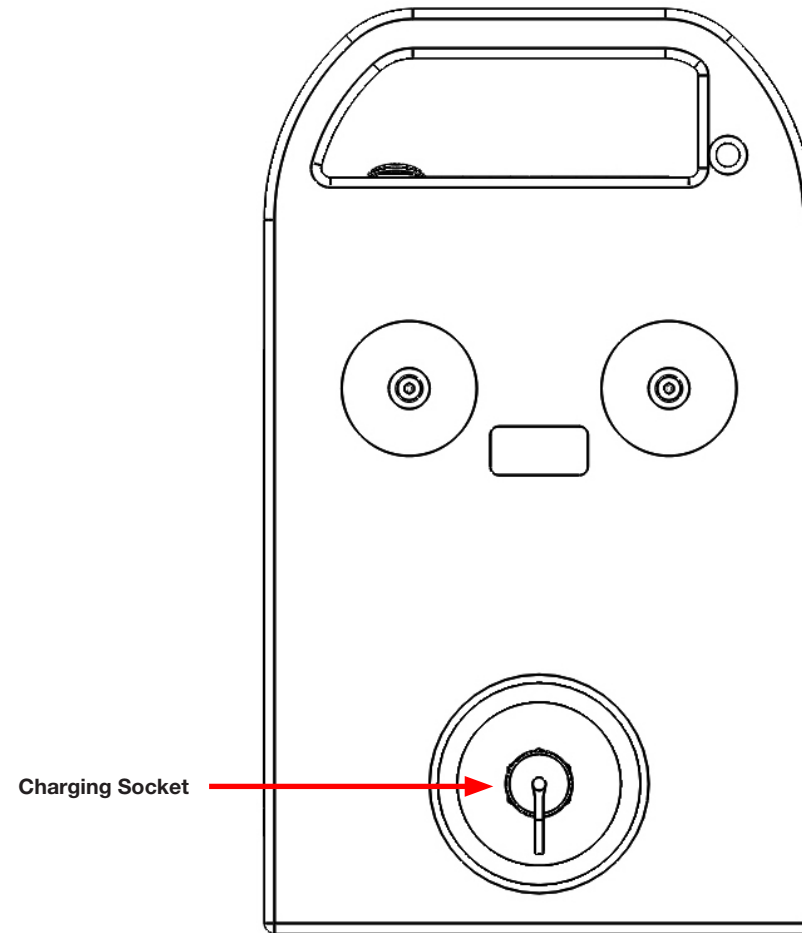
!DO NOT charge Responders in an explosive atmosphere or other hazardous environment.

The Responder should be switched off while charging.

To Charge the Responder:

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

1. Switch the Responder off and unscrew the charging socket cap on the rear of the unit.
2. Remove the Responder from the hazardous location.
3. Connect the supplied mains charger (Part No. 39-0049-2).
(Input: 100–240VAC, 50–60Hz, 1.5A Output: 24VDC, 2.5A, 60W).
4. When charging is complete, disconnect the power from the unit and replace the charging socket cap.



Rechargeable Responder - Rear

The Responder must always be used with its longest side vertical, and its carrying handle at the top. Switch the unit off when not in use to preserve the battery.

!The Responder is water resistant. However, do not submerge the unit in water.

To Switch the Responder ON:

- Press the ON/OFF button at the top of the unit.
- When first turned on, the LED will remain illuminated for 30 seconds for both the PCP and Rechargeable Responder
- For a rechargeable Responder, the green light in the centre of the button indicates how much battery charge is remaining (assuming 24/7 operation):

Indicator	Series 3	Series 4 - Use
Light solidly on	Up to 22 days left	> 90%
1 flash in 5 seconds	Up to 10 days left	25% - 90%
3 flashes in 5 seconds	Up to 1 day left	< 25%

- For a Permanently Powered Responder, the light should flash with an interval of 5 seconds.
- For a Primary Cell Responder, the light indicates the state of the Primary Cell Pack:

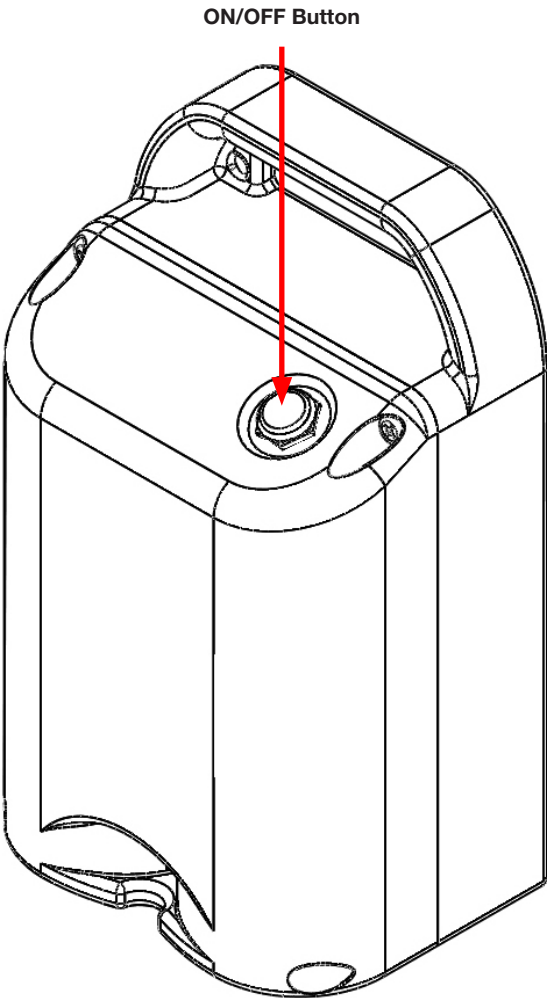
1 flash in 5 seconds	PCP Normal
3 flashes in 5 seconds	PCP Low

Under normal conditions, the Primary Cell Responder will operate for up to one year* before the batteries need replacing.

*One year for Series 3; Two years for Series 4

!When a rechargeable Responder is switched on and the green light is not illuminated, recharge the battery.

!When a primary cell Responder is switched on and the green light does not flash at all, replace the primary cell. The batteries within the primary cell may be replaced, but this must only be done in an ATEX safe environment, using batteries supplied by Wärtsilä Guidance Marine or authorised partners. Refer to ‘Series 4 Primary Cell Pack Battery Replacement Guide (94-0647)’.



2. Additional Information

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RadaScan Responders

EU ATEX Directive 2014/34/EU

RadaScan Responders are certified as intrinsically safe and can be used with flammable gases and vapours belonging to gas group IIB.

Series 3 Responders can be used in zones 0, 1 and 2.

Series 4 Responders can be used in zones 0, 1 and 2.



(See page 7)



US

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

Responder	
Type	Active
ATEX Compliance	Series 3 and 4 Responders may be used in zones 0, 1 and 2
Azimuth Response	170°
Elevation Response	+/- 35°
Power	Battery or Intrinsically Safe Permanently Powered
Battery Life	Series 3 12 months - Primary Cell Pack 3 weeks - Rechargeable Cell Series 4 Minimum 24 months - Primary Cell Pack Minimum 1 month - Rechargeable
Dimensions	170 x 305 x 128mm (W x H x D)
Weight	3.8kg (Rechargeable); 3.2kg (Mains/Primary)

Component	Part Number
Series 3	
Responder (Rechargeable)	20-0189-2
Responder (Mains Powered)	20-0195-2
Primary Cell Responder	20-0194-2
Primary Cell Pack	21-0375-1
PCP Interface Cable	33-0392-3
Recharger	39-0049-2
Mains Power Supply	21-0377-2
Mains PSU Interface Cable	33-0393
Lanyard	24-0260-2

Component	Part Number
Series 4	
Rechargeable Responder	20-0276
Primary Cell Pack Responder	20-0284
Permanently Powered Responder	20-0286
Primary Cell Pack	21-0505

Component	Part Number
Common	
Swivel Bracket	21-0328-1
PCP Battery Pack Bracket Assembly MK 2	21-0340-1
Battery Service Kit - Primary Cell Pack	31-0058-4

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