



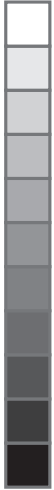


Chapter 5: Mounting

Chapter contents

- 5.1 Mounting the scanner on page 36
- 5.2 Radar scanner protection — sailing vessels on page 38





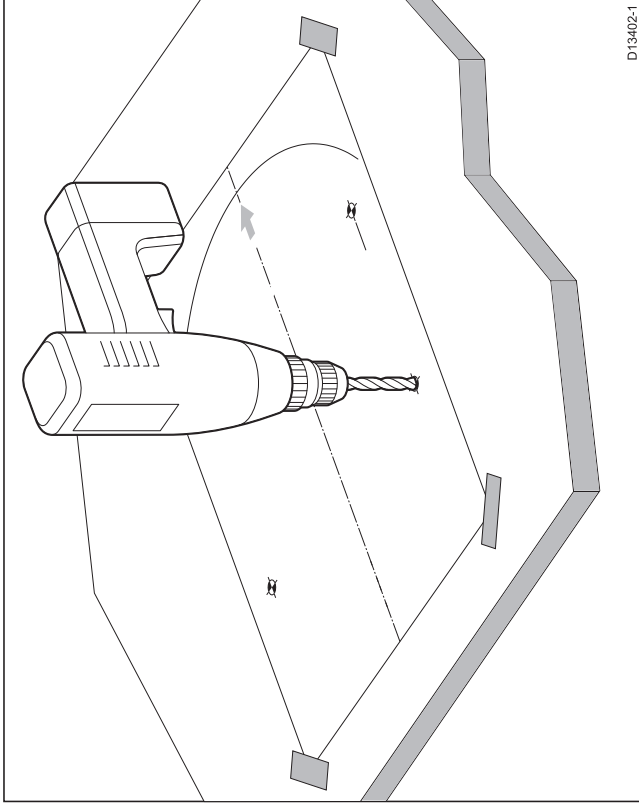
5.1 Mounting the scanner

Use a mounting location that:

- Is robust enough to support the Quantum scanner, under seagoing conditions.
- Meets the requirements described under *Scanner Position*

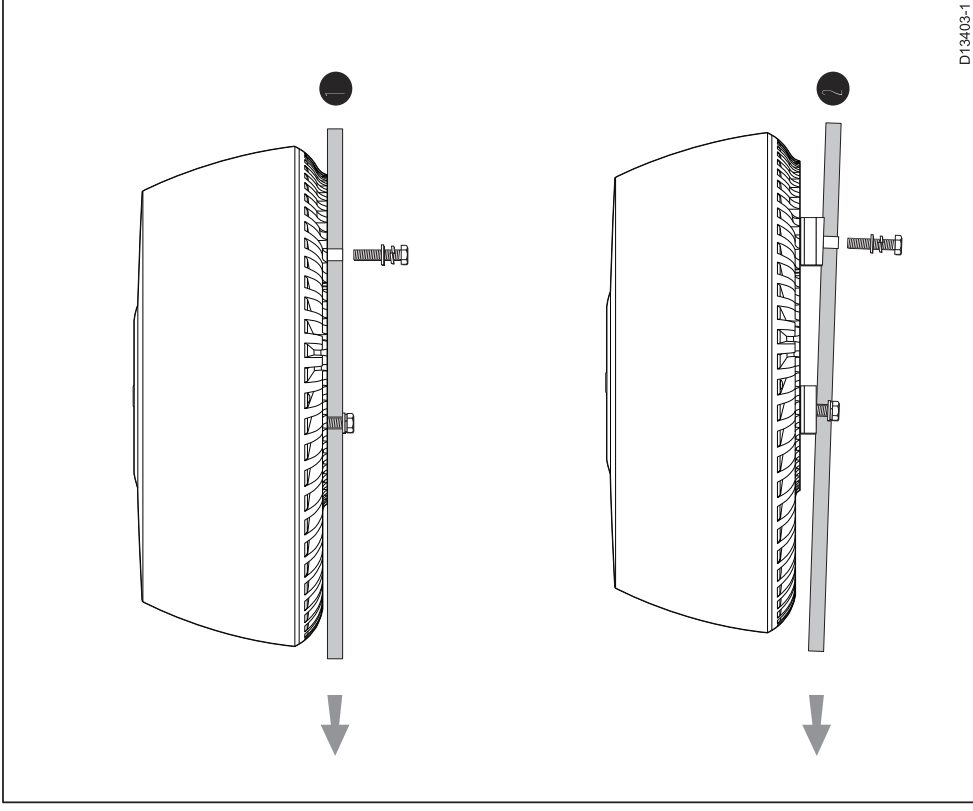
Then:

1. Tape the template to the mounting platform, ensuring that the arrow on the template is pointed towards the front of the vessel.



2. Drill 3 mm pilot holes in the four positions shown on the template.
3. Drill out the pilot holes to 10 mm diameter.
4. Place the Quantum scanner in position. If you are fitting it on a planing vessel, shim the rear of the scanner, so that the beam

points slightly down in the forward direction when the boat is at rest, to compensate for the bow rising at cruising speed

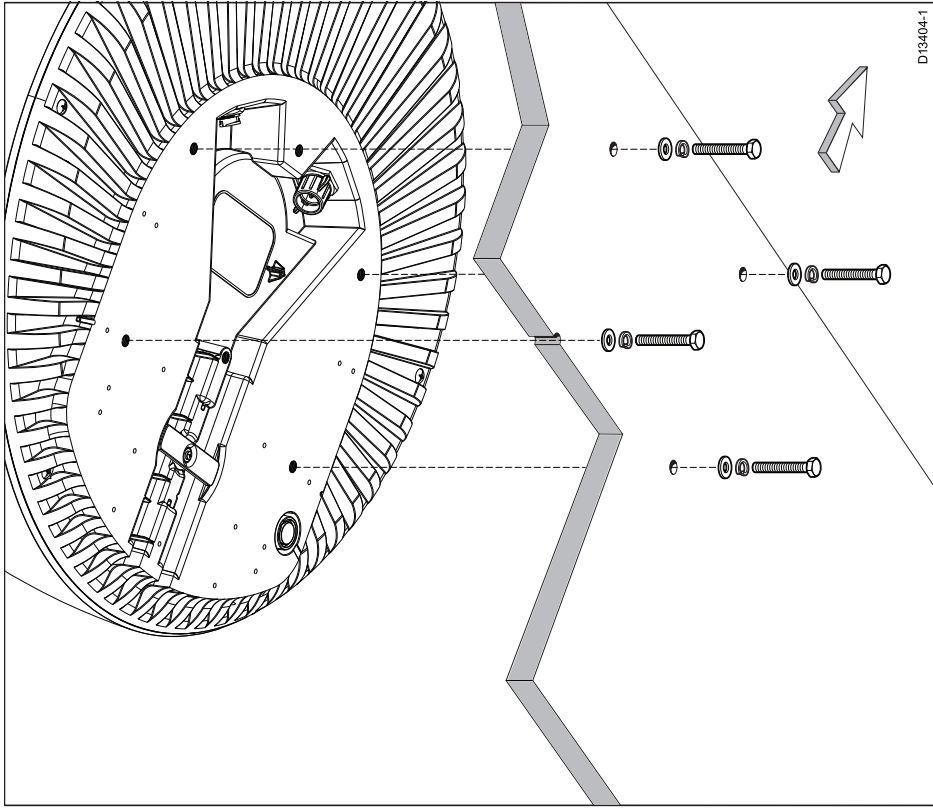




Item	Description
1	Mounting platform, non-planing boat (level install)
2	Mounting platform, planing boat (typical planing angle shown)

- Before securing the scanner to the mounting platform, connect the power cable (and optionally a data cable), ensuring that all cables are routed appropriately. See the [4.2 Connections overview](#) section for further information about making connections, and cable routing.
- Ensuring that the bolts do not enter the scanner base more than 25 mm (1 inch), secure the scanner with the 4 bolts flat washers and spring washers provided, as illustrated. If necessary, use

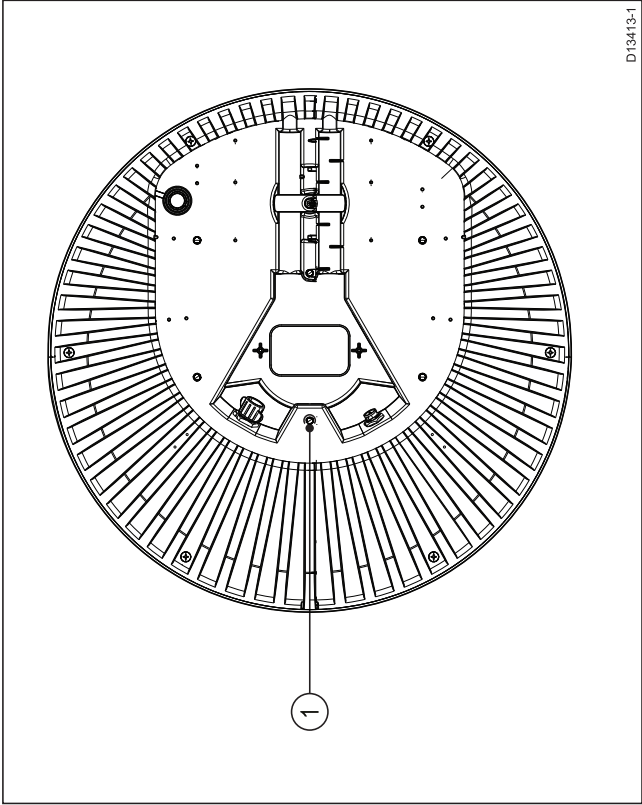
appropriate shims or extra washers to limit the length of bolt entering the scanner base.



- Tighten the bolts to a torque of 15 Nm (133 lbf/inch).



8. Attach a safety lanyard (not supplied) to your vessel, and secure the free end to the scanner using the attachment point shown in the following illustration:



Item	Description
1	Safety lanyard attachment point.

Note: If you are installing the radar scanner on a sailing vessel, additional protection for the radar scanner may be required. Refer to [5.2 Radar scanner protection — sailing vessels](#)

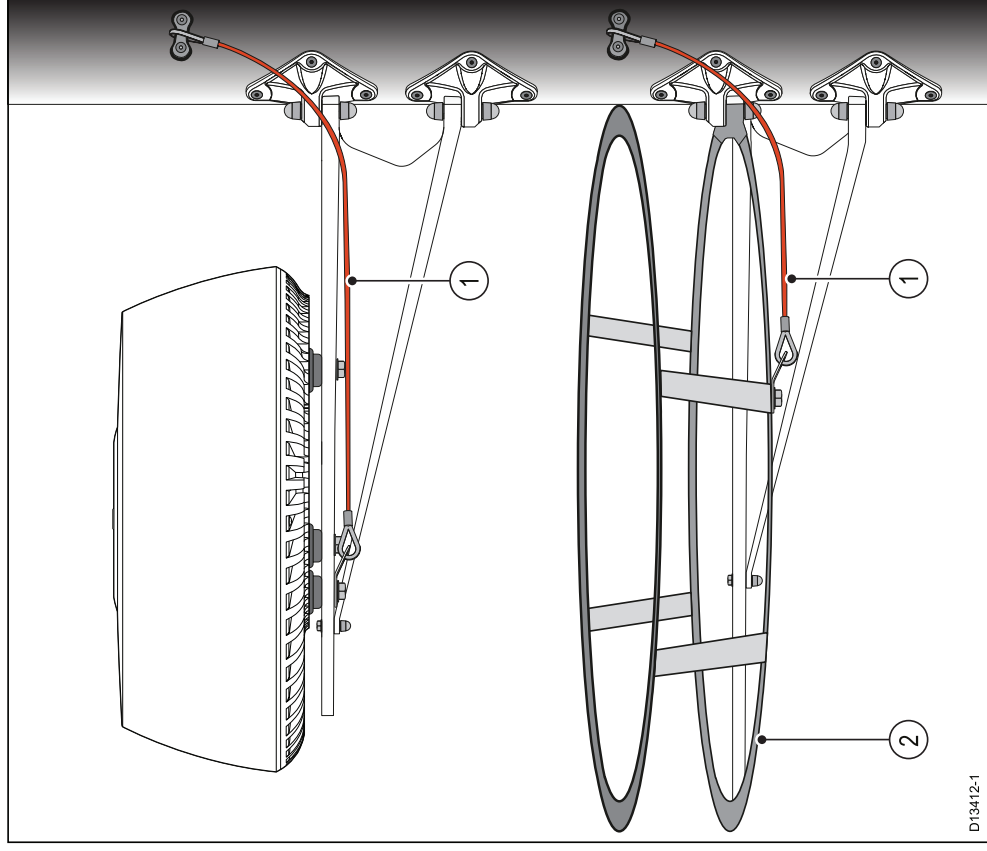
5.2 Radar scanner protection — sailing vessels

Additional considerations apply when installing the radar scanner on a sailing vessel.

- When mounting the radar scanner unit onto the mast, check that the unit is not fouled by the sails, especially when tacking.
- Depending on the type of sailing vessel and the design of the sailplan, a radar scanner guard should be attached to the mast if the sails or rigging contact either the radar scanner unit or the mounting bracket. Without a proper radar guard, serious damage can result to the radar mounting bracket and the radar itself. In extreme cases, such damage could result in the radar scanner unit being pulled off the mast. Therefore, it is recommended that a radar scanner guard should be mounted additionally and separately to the radar scanner mounting bracket.
- To prevent the risk of the radar scanner unit falling after it has been damaged, the security lanyard supplied with the mast bracket **MUST** be secured properly to the mast and to the radar scanner unit, according to the instructions provided with the bracket. If a safety lanyard is not supplied with the mounting bracket, contact your local dealer for appropriate parts. Do **NOT** attach other equipment to either the radar scanner unit or the bracket.

- Raymarine strongly recommends that you check the condition and security of the bracket mounting feet, the security lanyard(s), the radar scanner guard, and the radar scanner unit itself, on a yearly basis (or more frequently depending on environmental applications). Any fittings should be replaced as appropriate.

The following illustration shows an example of an installation featuring a radar scanner fitted to a typical mounting bracket, a radar guard attached to the mast (separately to the radar mounting bracket), and safety lanyards:



Note: The radar guard shown in the illustration above is provided as an example only. The exact design and positioning of the radar guard is wholly dependent on the nature of your vessel, sailplan, and installation environment. For example, for some vessels it is appropriate to locate the guard above the radar scanner; for other vessels, it may be more appropriate to fit it below the scanner. Raymarine does not supply radar guards but recommends that you select a guard that is attached directly to the mast and is completely separate to the radar mounting bracket. It may be necessary to have a radar guard custom designed to suit your specific vessel and installation environment. Please contact your local dealer for further advice.

1. Example of a typical safety lanyard.
2. Example of a typical radar scanner guard, attached to the mast independently of the radar mounting bracket.





Chapter 6: System checks and troubleshooting

Chapter contents

- [6.1 Post installation procedures on page 42](#)
- [6.2 Troubleshooting on page 44](#)





6.1 Post installation procedures

Before using the product, carry out the following:

- Mechanical checks.
- Switch on and initial setup.

Mechanical checks

Before switching on the Quantum scanner:

- Ensure that:
 - All securing bolts are fully tightened and the appropriate mechanical locking washers are in place.
 - All connections are securely made.
 - All connecting cables and wires are secured and protected as necessary.
- Ask your local Raymarine authorized installer to check the installation.

Switch on & initial setup

Use the information given here in conjunction with the detailed information in your multifunction display (MFD) documentation, to switch on and connect to the Quantum scanner, and to carry out the initial checks and setup tasks.

1. Power on your multifunction display (MFD) unit.
2. If you intend to make a wireless connection to the Quantum scanner, ensure that your MFD unit supports WiFi, and that WiFi connectivity is enabled on the unit.
3. To connect your MFD unit to the Quantum scanner:
 - i. To make a WiFi connection, open the Connect to Quantum radar screen on your MFD: **Menu > Set-up > System settings > External Devices > Quantum Radar > Pair with Quantum radar.**



Enter the SSID and Password for your scanner, then select **Connect**.

Note: The SSID and WiFi password are provided on the box that the scanner was packed in, and also on the serial number-label fixed to the underside of the scanner.

Note: It can take up to 2 minutes to make the WiFi connection to the scanner.

- ii. For a wired connection, open the Radar application on your MFD unit. If the Radar scanner is not in standby, a dialog will be displayed. You will then need to select the **Power On** option to place the scanner into Standby. The display will then indicate when the connection to the Quantum



scanner has been made. The **Power up Radar** option is also accessible by momentarily pressing the MFD's Power button.

Note: If the connection to the MFD is lost while the scanner is in Standby mode, the scanner will switch to Sleep mode within 30 minutes. When the connection to the MFD is restored, return the scanner to Standby mode using the **Power up Radar** option on the MFD's Shortcut screen, accessible by momentarily pressing the MFD's Power button.

4. Ensure that all personnel are clear of the scanner, then switch the scanner to Transmit mode using the **Radar: Tx** option on the Shortcut screen, accessible on your MFD by momentarily pressing the MFD's power key.

Note: If the connection to the MFD is lost while the scanner is in Transmit mode, the scanner will switch to Standby mode within 5 seconds. When the connection to the MFD is restored, return the scanner to Transmit mode using the **Radar: Tx** option on the MFD's Shortcut screen.

5. Carry out the radar operations described in the relevant MFD Operation handbook and check that all functions appear to be satisfactory.
6. Check the bearing alignment (as described in the MFD Operation handbook) to ensure that targets appear at their correct bearing relative to the boat's bow. Adjust the alignment as necessary.

Retain your WiFi password

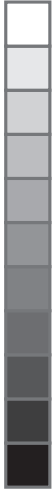
To connect to the radar using WiFi (wireless), you will need to know the unit's SSID, and WiFi pass key (password).

Both the SSID and WiFi pass key are provided on the radar scanner packaging, and are also shown on the serial number label on the underside of the unit. You may wish to make a separate note of this information (kept in a secure location). You should also keep the radar scanner packaging in a safe place for future reference.

System checks and troubleshooting

Operation instructions

For detailed operation instructions for your product, refer to the documentation that accompanies your display.



6.2 Troubleshooting

The troubleshooting information provides possible causes and corrective action required for common problems associated with marine electronics installations.

All Raymarine products are, prior to packing and shipping, subjected to comprehensive test and quality assurance programs. However, if you experience problems with the operation of your product this section will help you to diagnose and correct problems in order to restore normal operation.

If after referring to this section you are still having problems with your unit, please contact a Raymarine authorized dealer for further advice.





Troubleshooting procedure

Use the following table to identify problems and remedial actions.

Symptom	Action
No connection can be made to the scanner.	Ensure the data cable (if used) is connected at both ends and is in good condition. If using a WiFi (wireless) connection to the scanner unit, check that you have entered the correct WiFi pass key for the SSID that matches your scanner. Both the SSID and WiFi pass key are provided on the scanner packaging, and are also shown on the serial number label on the underside of the unit. Refer to your multi-function display (MFD) documentation for further information. If the scanner unit has shut down, awaken it by using the Power Up Radar option in the Shortcut screen, accessible on your MFD by momentarily pressing the MFD's power key. The radar unit will shut down within 30 minutes if neither a wired (RayNet) connection, nor a wireless (WiFi) connection can be made to a multifunction-display unit (MFD). Ensure power supply thermal breaker has not tripped or fuse has not blown. If necessary, reset breaker or replace fuse ONCE ONLY. If breaker keeps tripping or fuse keeps blowing, contact a Raymarine authorized dealer for assistance. Ensure power supply maintains the correct voltage when the system is switched on. Ensure all products in the system have the correct software. Refer to www.raymarine.com/software/ for the latest software updates and the software update procedure for your product. If the Quantum Radome is connected to the multifunction display (MFD) via a SeaTalk^{ns} or RayNet network switch, ensure that: • All relevant equipment is correctly connected to the network switch. • The network switch power supply is satisfactory. • The network switch is in good condition. • Network cables are securely connected and in good condition.
Displayed bearing is different to the true bearing.	Carry out the bearing alignment procedure described in the Operations manual for the relevant MFD.

System checks and troubleshooting





Retain your WiFi password

To connect to the radar using WiFi (wireless), you will need to know the unit's SSID, and WiFi pass key (password).

Both the SSID and WiFi pass key are provided on the radar scanner packaging, and are also shown on the serial number label on the underside of the unit. You may wish to make a separate note of this information (kept in a secure location). You should also keep the radar scanner packaging in a safe place for future reference.





Chapter 7: Maintenance

Chapter contents

- [7.1 Maintenance on page 48](#)
- [7.2 Unit cleaning instructions on page 48](#)





7.1 Maintenance

Once a year:

1. Power-off the radar.
2. Remove one of the antenna-securing bolts and associated washers.
3. Clean the bolt and washers.
4. Replace the bolt and associated washers.
5. Repeat steps 1 to 5 for all antenna-securing bolts.
6. Tighten all antenna-securing bolts to a torque of 15 Nm (133 lbf/inch).

Periodically, carry out these other maintenance tasks, with the radar powered off:

- Ensure the antenna is firmly attached to the mounting surface
- Check that the cable connections are in good condition and securely attached.
- Examine all cables for signs of chafing, cuts or other damage.



Warning: High voltages

This product may contain high voltages. Do NOT remove any covers or otherwise attempt to access internal components, unless specifically instructed in the documentation provided.



7.2 Unit cleaning instructions

The unit does not require regular cleaning. However, if you find it necessary to clean the unit, please follow the steps below:

1. Ensure power is switched off.
2. Wipe unit clean with a damp cloth.
3. If necessary, use a mild detergent solution to remove grease marks.



Chapter 8: Technical support

Chapter contents

- 8.1 Raymarine product support and servicing on page 50
- 8.2 Operation instructions on page 51
- 8.3 Viewing product information on page 52





8.1 Raymarine product support and servicing

Raymarine provides a comprehensive product support service, as well as warranty, service, and repairs. You can access these services through the Raymarine website, telephone, and e-mail.

Product information

If you need to request service or support, please have the following information to hand:

- Product name.
- Product identity.
- Serial number.
- Software application version.
- System diagrams.

You can obtain this product information using the menus within your product.

Servicing and warranty

Raymarine offers dedicated service departments for warranty, service, and repairs.

Don't forget to visit the Raymarine website to register your product for extended warranty benefits: <http://www.raymarine.co.uk/display/?id=788>.

Region	Telephone	E-mail
United Kingdom (UK), EMEA, and Asia Pacific	+44 (0)1329 246 932	emea.service@raymarine.com
United States (US)	+1 (603) 324 7900	rm-usrepair@flir.com

Web support

Please visit the "Support" area of the Raymarine website for:

- **Manuals and Documents** — <http://www.raymarine.co.uk/display/?id=10125>
- **FAQ / Knowledgebase** — <http://www.raymarine.co.uk/knowledgebase/>
- **Technical support forum** — <http://raymarine.ning.com/>
- **Software updates** — <http://www.raymarine.com/software>

Telephone and e-mail support

Region	Telephone	E-mail
United Kingdom (UK), EMEA, and Asia Pacific	+44 (0)1329 246 777	support.uk@raymarine.com
United States (US)	+1 (603) 324 7900 (Toll-free: +800 539 5539)	support@raymarine.com
Australia and New Zealand	+61 2 8977 0300	aus.support@raymarine.com (Raymarine subsidiary)
France	+33 (0)1 46 49 72 30	support.fr@raymarine.com (Raymarine subsidiary)
Germany	+49 (0)40 237 808 0	support.de@raymarine.com (Raymarine subsidiary)
Italy	+39 02 9945 1001	support.it@raymarine.com (Raymarine subsidiary)
Spain	+34 96 2965 102	sat@azimut.es (Authorized Raymarine distributor)

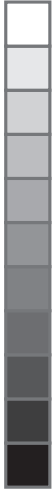


8.2 Operation instructions

For detailed operation instructions for your product, refer to the documentation that accompanies your display.

Region	Telephone	E-mail
Netherlands	+31 (0)26 3614 905	support.nl@raymarine.com (Raymarine subsidiary)
Sweden	+46 (0)317 633 670	support.se@raymarine.com (Raymarine subsidiary)
Finland	+358 (0)207 619 937	support.fi@raymarine.com (Raymarine subsidiary)
Norway	+47 692 64 600	support.no@raymarine.com (Raymarine subsidiary)
Denmark	+45 437 164 64	support.dk@raymarine.com (Raymarine subsidiary)
Russia	+7 495 788 0508	info@mikstmarine.ru (Authorized Raymarine distributor)





8.3 Viewing product information

You can view information about your unit from the **Diagnostics** menu on a compatible multifunction display. This option displays information such as product serial number and software version.

With the Homescreen displayed:

1. Select **Set-up**.
2. Select **Maintenance**.
3. Select **Diagnostics**.
4. Select the **Select Device** option.
A list of connected devices is displayed.
5. Select the product for which you want to view information.
Alternatively, select **Show All Data** to display information for all connected products.





Chapter 9: Technical specification

Chapter contents

- 9.1 Technical specification on page 54





9.1 Technical specification

Technical specification

Approvals

Approvals:	Certification:
USA:	47CFR FCC Part 2 & Part 80 Certificate of Approval
Canada:	RSS238 Iss. 1 Technical Acceptance Certificate
European Union & EFTA:	R & TTE Directive 1999/05/EC Certificate of Opinion
Australia/New Zealand:	ACMA Declaration of Conformity Compliance level 3

General

Dimensions:	
Diameter:	541.0 mm
Height:	209.5 mm
Weight:	5.6 kg
Supply voltage:	Either 12 V dc or 24 V dc nominal Minimum: 10.8 V dc Maximum: 31.2 V dc
Power consumption:	Transmit mode (maximum): 17 W Standby mode: 7 W Sleep mode: 2 W
Environmental:	

Waterproof to:	IPX6
Operating temperature range:	-10°C to +55°C
Storage temperature range:	-25°C to +70°C
Additional storage conditions:	Store upright; do not block vents on underside
Humidity:	Up to 95% at 35°C
Maximum wind speed:	100 kts
Range scales:	1/16, 1/8, 1/4, 3/8, 1/2, 3/4, 1, 1.5, 2, 3, 4, 6, 8, 12, 16, and 24 nautical miles

Transmitter

Type:	X-band solid-state transmitter with pulse compression technology
Transmit frequency:	9354 MHz to 9446 MHz
Peak power output:	20 W
Duplexer:	Circulator
Pulse widths (3 dB):	40 ns to 14.7 µs
Chirp lengths:	400 ns to 22 µs
Pulse repetition frequency:	2083 Hz to 4167 Hz
Chirp bandwidth:	Up to 32 MHz
Standby mode:	Scanner rotation - OFF Scanner transmission - OFF WiFi link - ON

Receiver

IF bandwidth:	26 MHz
Noise figure:	Less than 4 dB



Antenna

Type:	Phased array
Beamwidth (nominal)	Horizontal: 4.9° Vertical: 20°
Polarization:	Horizontal
Rotation speed:	24 rpm nominal







Chapter 10: Spares and accessories

Chapter contents

- 10.1 Quantum Radome accessories on page 58
- 10.2 Network hardware on page 58
- 10.3 Network cable connector types on page 59
- 10.4 **RayNet** to **RayNet** cables and connectors on page 60
- 10.5 RayNet to RJ45 adapter cables on page 62
- 10.6 **RJ45 SeaTalk^{hs}** network and patch cables on page 64





10.1 Quantum Radome accessories

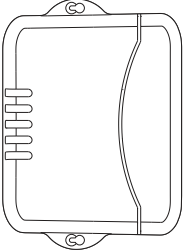
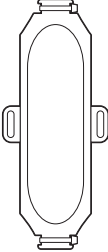
The following accessories are available for the Quantum scanner:

Accessories

Item	Part number
10 m Quantum power cable	A80309
5 m Quantum data cable	A80274
10 m Quantum data cable	A80275
15 m Quantum data cable	A80310
25 m Quantum data cable	A80311
Quantum Y-adapter cable	A80308
Raynet cable joiner	A80162



10.2 Network hardware

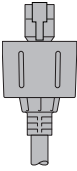
Item	Part number	Notes
HS5 RayNet network switch 	A80007	5-port switch for network connection of multiple devices featuring RayNet connectors. Equipment with RJ45 SeaTalk ^{hs} connectors can also be connected using suitable adapter cables.
RJ45 SeaTalk ^{hs} network switch 	E55058	8-port switch for network connection of multiple SeaTalk ^{hs} devices featuring RJ45 connectors.
RJ45 SeaTalk ^{hs} crossover coupler 	E55060	- Enables direct connection of RJ45 SeaTalk^{hs} devices to smaller systems where a switch is not required. - Enables the connection of RJ45 SeaTalk^{hs} devices to a HS5 RayNet network switch (in conjunction with suitable adapter cables). - Enables 2 RJ45 SeaTalk^{hs} cables to be connected together to extend the length of the cabling. Recommended for internal installations.

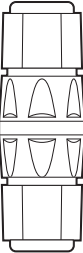




10.3 Network cable connector types

There are 2 types of network cable connector — RayNet, and RJ45 SeaTalk^{hs}.

	RJ45 SeaTalk ^{hs} connector.
	RayNet connector.

Item	Part number	Notes
Ethernet RJ45 coupler 	R32142	Important: Do NOT use crossover devices for POE (Power Over Ethernet) connections. - Enables direct connection of RJ45 SeaTalk^{hs} devices to smaller systems where a switch is not required. - Enables the connection of RJ45 SeaTalk^{hs} devices to a HS5 RayNet network switch (in conjunction with suitable adapter cables). - Enables 2 RJ45 SeaTalk^{hs} cables to be connected together to extend the length of the cabling. Recommended for external installations.



Quantum Radome

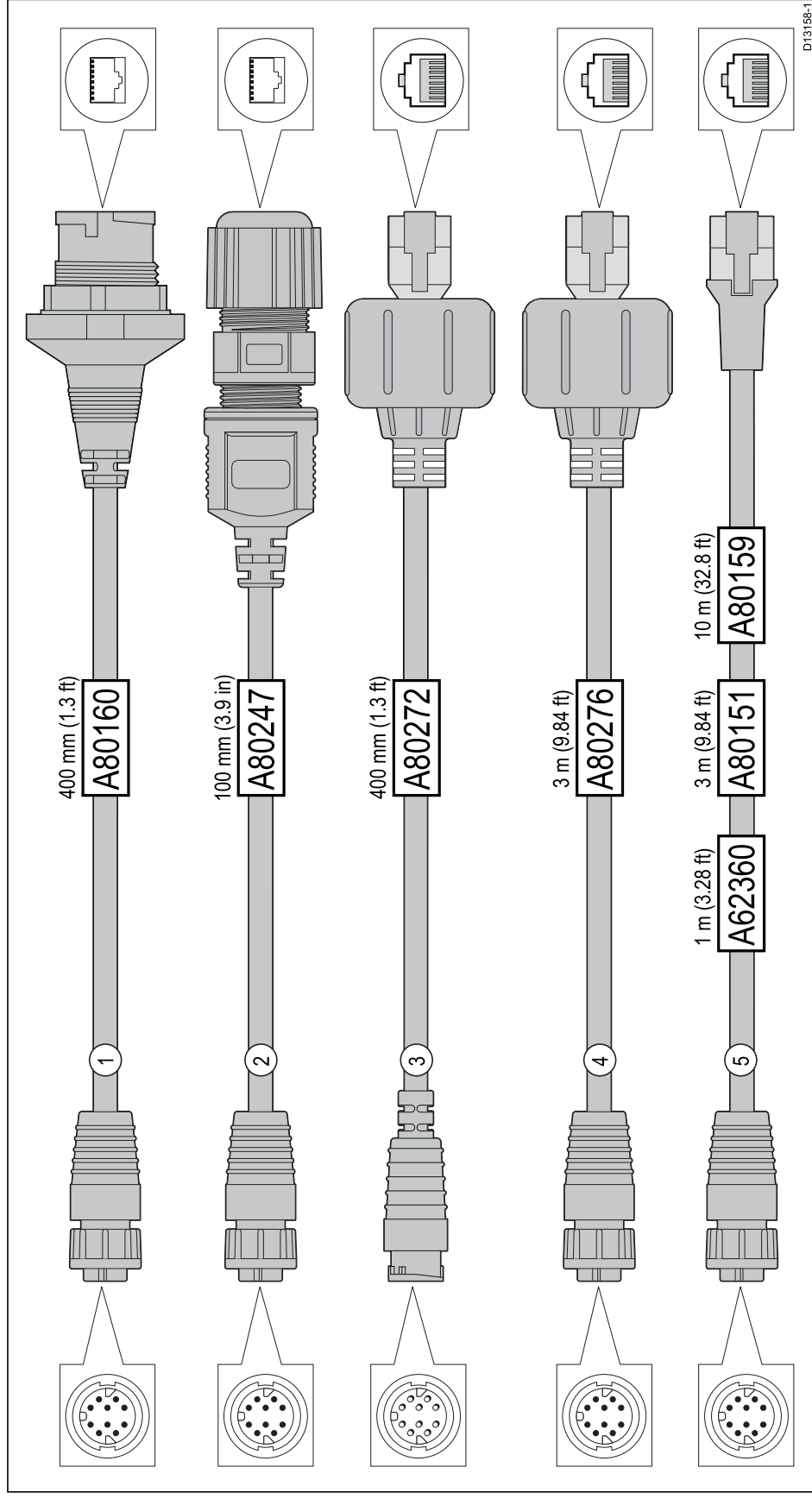


	Description	Typical use	Quantity
3	RayNet to RayNet right-angle coupler / adapter.	Suitable for connecting RayNet cables at 90° (right angle) to devices, for installations where space is limited. For example, use this adapter to connect a RayNet cable to a multifunction display when there is not enough space behind the display for the usual cable bend radius required by a standard RayNet cable. This adapter features a RayNet (female) socket at one end, and a RayNet (male) plug at the other end.	1
4	Adapter cable with a RayNet (male) plug on both ends.	Suitable for joining (female) RayNet cables together for longer cable runs.	1





10.5 RayNet to RJ45 adapter cables



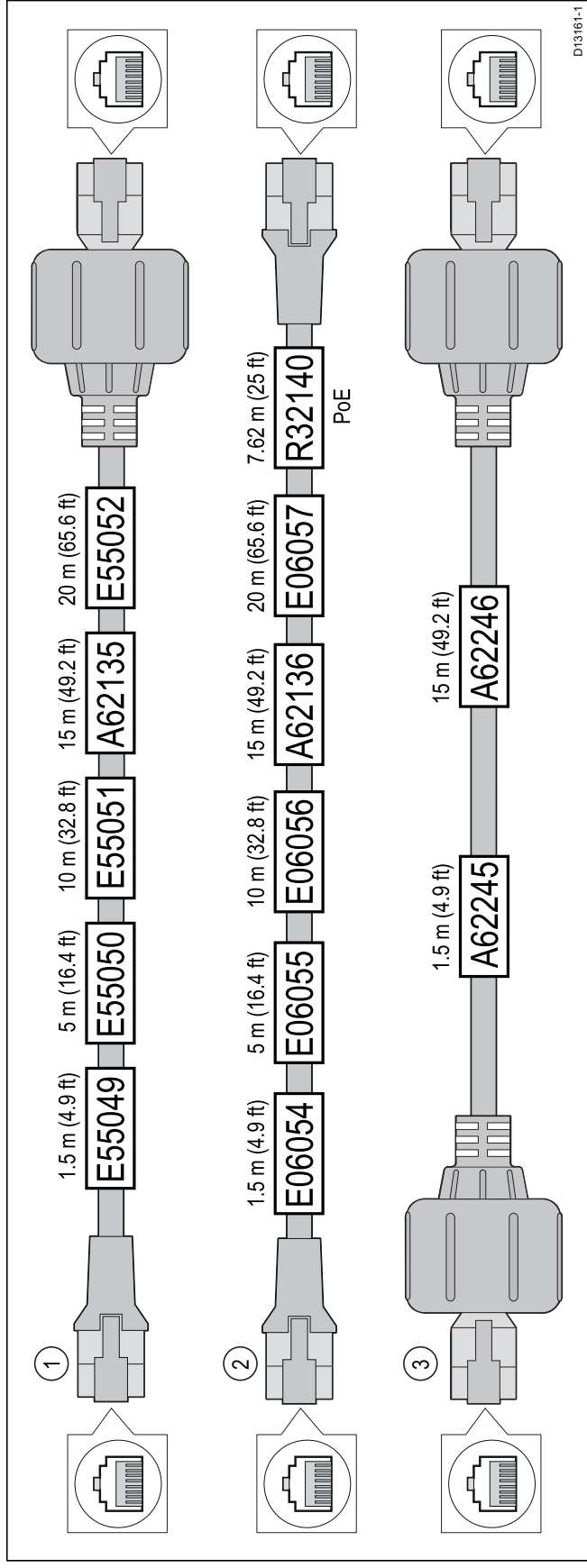


	Description	Typical use	Quantity
1	Adapter cable with a RayNet (female) socket on one end, and a waterproof (female) socket on the other end accepting the following cables with an RJ45 SeaTalk^{ts} waterproof locking (male) plug: • A62245 (1.5 m). • A62246 (15 m).	A typical use for this adapter cable is to connect a DSM300 sonar module to a LightHouse MFD, using all-waterproof cable connections. This adapter cable will also accept the following RJ45 SeaTalk^{ts} cables, although the RJ45 plug that connects at the equipment end (e.g. DSM300) will NOT be waterproof: • E55049 (1.5 m). • E55050 (5 m). • E55051 (10 m). • A62135 (15 m). • E55052 (20 m).	1
2	Adapter cable with a RayNet (female) socket on one end, and a waterproof (female) RJ45 socket on the other end, along with a locking gland for a watertight fit.	Directly connect a Raymarine radar scanner with an RJ45 SeaTalk^{ts} (male) cable to a RayNet network switch (e.g. HS5) or LightHouse MFD.	1
3	Adapter cable with a RayNet (male) plug on one end, and an RJ45 SeaTalk^{ts} waterproof (male) plug on the other end.	Connect a legacy G-Series GPM-400 , C-Series Widescreen or E-Series Widescreen MFD to a Raymarine radar scanner supplied with a RayNet power / data cable.	1
4	Adapter cable with a RayNet (female) socket on one end, and an RJ45 SeaTalk^{ts} waterproof (male) plug on the other end.	Connect a legacy G-Series GPM-400 , C-Series Widescreen or E-Series Widescreen MFD to a RayNet network switch (e.g. the HS5).	1
5	Adapter cable with a RayNet (female) socket on one end, and an RJ45 SeaTalk^{ts} (female) socket on the other end.	Connect a LightHouse MFD to a legacy SR6 switch / weather receiver or a legacy 8-port SeaTalk^{ts} network switch. Another common use for the cable is in conjunction with a crossover coupler (E55060 or R32142) to connect Raymarine products with an RJ45 connection (e.g. radar scanner, thermal camera or DSM300) to a LightHouse MFD or RayNet network switch (e.g. the HS5).	1





10.6 RJ45 SeaTalk^{hs} network and patch cables





	Description	Typical use	Quantity
1	RJ45 SeaTalk^{ths} network cables have an RJ45 SeaTalk^{ths} (male) plug on one end, and a waterproof RJ45 SeaTalk^{ths} (male) plug with locking collar on the other end.	Typical uses for these cables include: - Connecting a device with a RJ45SeaTalk^{ths} socket (e.g. the DSM300, or an E-Series Widescreen E90W, E120W or E140W legacy MFD) to a SeaTalk^{ths} 8-port network switch. - Connecting a thermal camera with an RJ45 (male) plug to an E-Series Widescreen E90W, E120W or E140W legacy MFD, via an RJ45 coupler (R32142). This assumes that PoE (Power over Ethernet) connections are not required, because there is no JCU (Joystick Control Unit) in the system.	1
2	RJ45 SeaTalk^{ths} patch cables have an RJ45 SeaTalk^{ths} (male) plug on each end.	Typical uses for these cables include: - Connecting multiple SeaTalk^{ths} 8-port network switches. - Connecting a PC or laptop computer running Voyager Planner software to a SeaTalk^{ths} 8-port network switch. - Connecting a JCU (Joystick Control Unit) to a thermal camera, via a PoE injector. For this particular connection the R32140 cable is required, as this supports PoE (Power over Ethernet).	1
3	RJ45 SeaTalk^{ths} patch cables have an RJ45 SeaTalk^{ths} (male) plug on each end. Each plug features a locking collar for a fully waterproof connection.	A typical use for these cables is: Connecting a device with a locking-type RJ45SeaTalk^{ths} socket (e.g. the DSM300), to a legacy MFD with a locking-type RJ45SeaTalk^{ths} socket (e.g. the E-Series Widescreen E90W, E120W or E140W).	1









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