



RVL User Manual

A500-09-0005

Version v1.04

**FORSBERG-SERVICES LTD
RICHMOND HOUSE, WHITE CROSS
LANCASTER, LA1 4XF
UNITED KINGDOM**

**TEL: +44 (0) 1524 383320
FAX: +44 (0) 1524 382939**

**THIS DOCUMENT IS THE PROPERTY OF
FORSBERG-SERVICES LIMITED**

It is issued for the information of such persons only as need to know its contents in the course of their work. Any person finding this document should contact Forsberg-Services Limited for its safe return to the address on this page with particulars of how and where found.

Distribution

Name	Establishment	Copy No.

Related Documents

Document No.	Document Title	Issue

Version Record

Issue	Change Notes	Date
V1.00	First issue	11/05/15
V1.01	Updated with CE Marking and safety information.	26/06/15
V1.02	Edited product information	21/07/15
V1.03	Design update	29/10/15
V1.04	Formatting changes	22/03/16

Authorisation

Issue	Author	Authorised by	Date
V1.00	Lee Sessions	RT/SM	11/05/15
V1.01	Stuart Mill	CM	26/06/15
V1.02	M. Hoole	RT	21/07/15
V1.03	M. Hoole	RT	29/10/15
V1.04	M. Hoole	RT	22/03/16

Amendment Records

Amendment Details	Page	Signature	Date
V1.02	throughout	M. Hoole	21/07/15
V1.03	throughout	M. Hoole	29/10/15
V1.04	throughout	M. Hoole	22/03/16

Proprietary Notice

Information in this document is subject to change without notice and does not represent a commitment on the part of Forsberg Services Limited.

The information within this document is understood to be true and correct at the time of publication.

No part of this document may be reproduced or transmitted in any form or by any means, electronic or mechanical, including photocopying or recording, for any purpose without the express written permission of Forsberg Services Limited.

If there is any doubt, please contact Forsberg Services Ltd on +44 (0) 1524 383320.

© 2015 Forsberg Services Limited. All rights reserved.

i. Contents

1	Safety Information	1
2	Package contents	2
3	Items you need to supply	3
4	Identifying components.....	4
4.1	RVL Transmitter	4
4.2	RVL Receiver.....	5
5	Setting up the RVL system	6
5.1	Mounting the Transmitter	6
5.2	Mounting the Receiver	6
6	Connecting the RVL system	7
7	Troubleshooting.....	9
8	Specifications	10
8.1	RVL-1 Transmitter	10
8.2	RVL-1 Receiver	11
9	Legal Notices.....	12

1 Safety Information

- Before installation and use, please read and follow all instructions
- Keep these instructions for future reference
- Install in accordance with the manufacturers instructions
- Protect cables from being walked on or pinched
- Refer all servicing to qualified service personnel
- The RVL receiver is not constructed to be mounted outdoors. Do not expose the receiver directly to water or extreme temperatures
- Do not open the transmitter or receiver. There are no user serviceable components inside.
- Opening of the transmitter or receiver by unauthorized personnel will void the manufacturers warranty.

2 Package contents



RVL-1 RVL Receiver



RVL-1 RVL Transmitter



Power cable

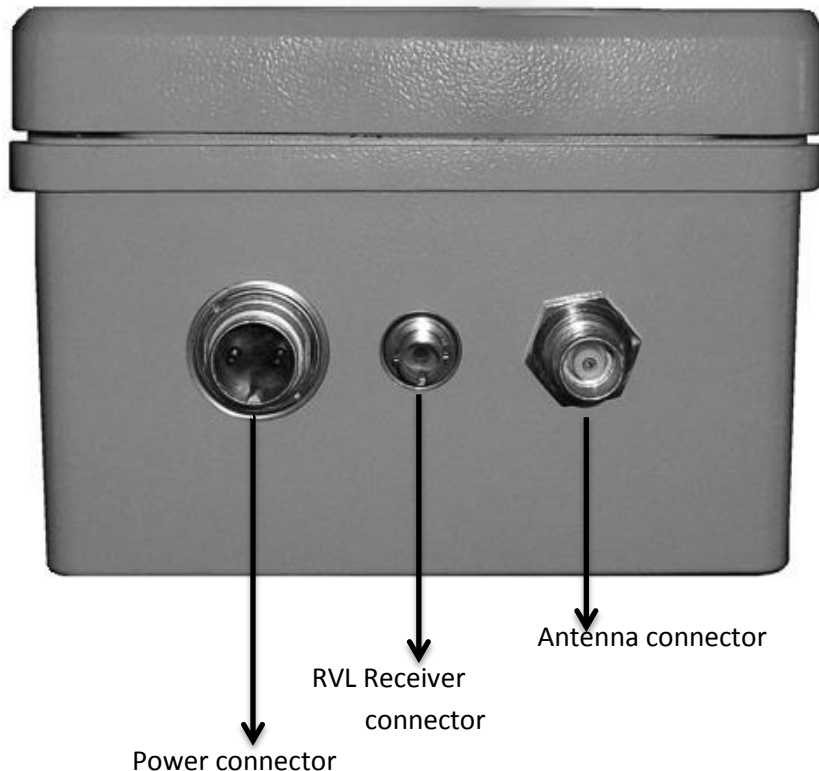
If any components are missing, contact Forsberg Services Ltd on +44(0)1524 383 320

3 Items you need to supply

- GPS antenna (L1/L2/L-Band/GPS/L5)
- GPS Receiver
- Power supply for the RVL Transmitter (see specifications on page 9 for more information)
- Multimode 50/125 fibre optic cable with ST connectors
- Two 50 Ω antenna cables
- Line amplifier (required if antenna and transmitter are more than 100 feet from each other. Recommended: FSL LA-21-L1L2-T)

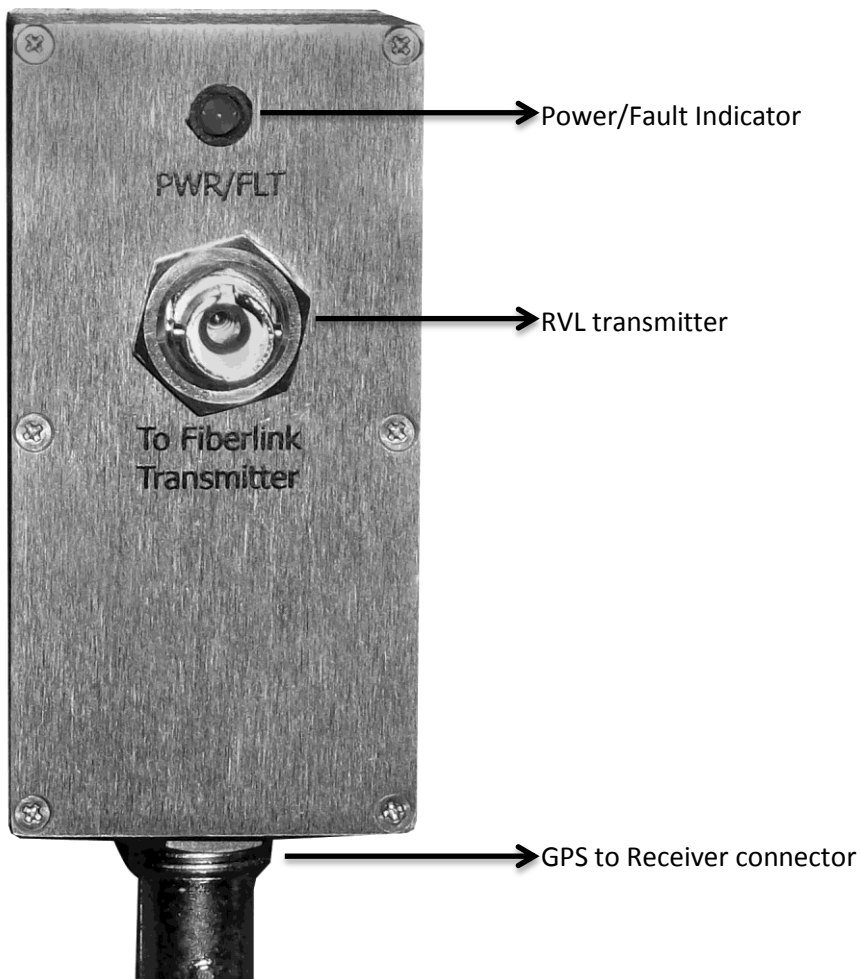
4 Identifying components

4.1 RVL Transmitter



External Connectors	Description
Power Connector	Provides power to the transmitter.
RVL Receiver Connector (ST)	Sends the GPS signal to the RVL Receiver.
Antenna Connector (TNC)	Receives the GPS signal from the GPS antenna.

4.2 RVL Receiver



External Connectors	Description
Power/Fault Indicator	Indicates power and signal strength as follows: <ul style="list-style-type: none"> • Green—System is working correctly. • Red—Fibre optic cable is not connected or antenna is not connected.
RVL Transmitter Connector (ST)	Receives the GPS signal from the RVL Transmitter.
GPS Receiver Connector (BNC)	Sends the GPS signal to your GPS receiver.

5 Setting up the RVL system

5.1 Mounting the Transmitter

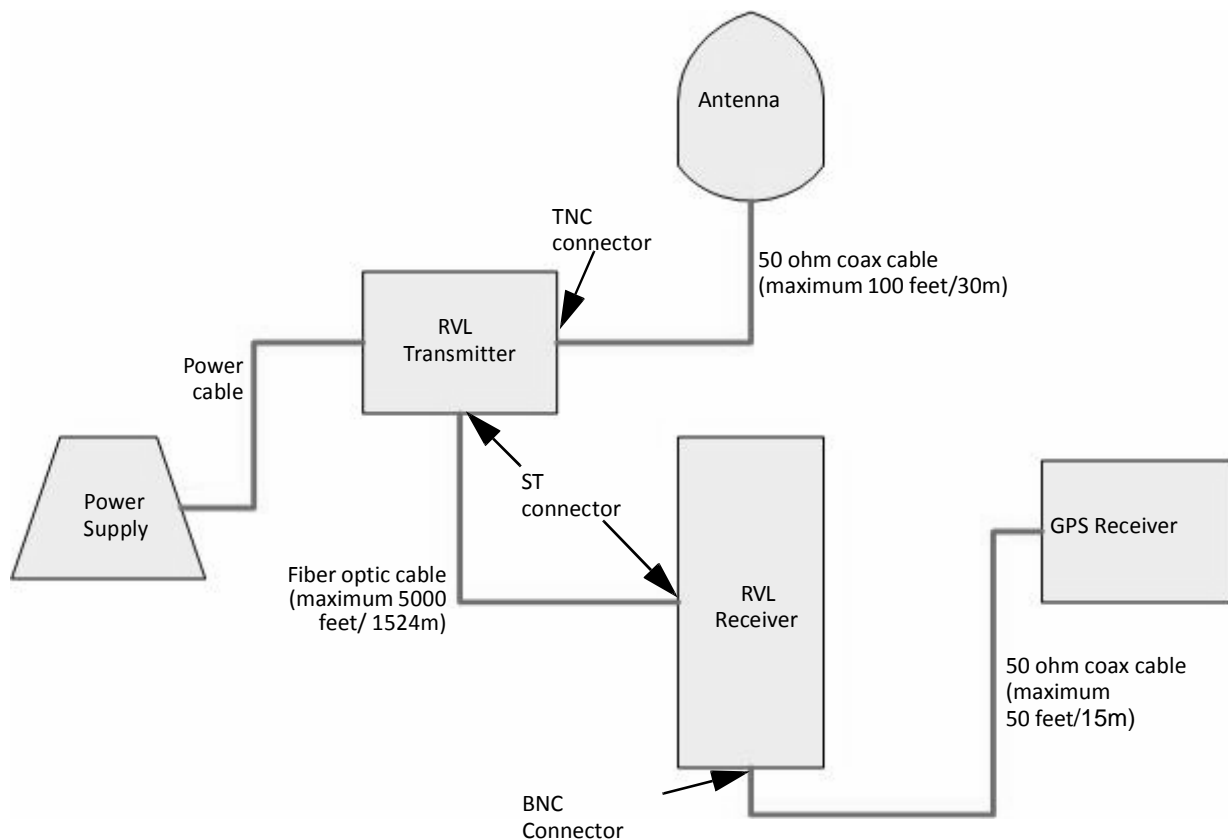
Mount the transmitter as follows:

- The RVL Transmitter is weather resistant and may be mounted outdoors or indoors. The transmitter is constructed to withstand extreme temperatures and adverse weather conditions.
- The transmitter must be mounted at least 3 feet below the GPS antenna.
- If there is more than 100 feet of cable used in the installation of the GPS antenna and the RVL Transmitter, we recommend you use a GPS inline amplifier on the antenna output. (Recommended: LA-21-L1L2-T if the antenna output and cable connectors are TNC. If the connectors are not TNC, contact your Forsberg Services Sales Representative or visit www.starlinkdgps.com for details.)
- The power supply you use to power the RVL Transmitter must be the correct type for the environment you install it in. For example, the power supply must be rated for outdoor use if it is mounted outside.

5.2 Mounting the Receiver

Mount the receiver as follows:

- The RVL Receiver must be mounted indoors. The receiver is not weather resistant.
- The receiver is powered by the GPS receiver (Power Requirement: 5V – 12V DC).



6 Connecting the RVL system

- 1 Connect one end of a coaxial antenna cable (not included) to the GPS antenna.

Important

If the total cable length is greater than 100ft/30.5m, we strongly recommend using an inline amplifier.

- 2 Connect the other end of the coaxial antenna cable to the TNC female connector (marked **From Antenna**) on the RVL Transmitter. For more information on installing the antenna, see the installation guide included with the GPS antenna. Do not apply any external voltage to the antenna port.
- 3 Connect one end of the fibre optic cable (multimode 50/125 fiber optic cable with ST connectors) to the **To Receiver** connector on the RVL Transmitter. For more information on installing the fibre optic cable, see the instructions included with the cable.



- 4 Connect the Binder end of the power supply cable (included) to the **Power** connector on the RVL Transmitter.

Caution

Do not connect the power supply at this time.

- 5 Connect the fibre optic cable from the RVL Transmitter to the RVL Receiver installed inside of the building. Connect the cable to the **RVL Transmitter** connector.

Caution

Do not kink or make sharp bends with the fibre optic cable.

- 6 Connect a coaxial antenna cable (not included) to the BNC female connector marked **To GPS Receiver** on the RVL Receiver
- 7 Connect the other end of the coaxial antenna cable to the GPS receiver.
For more information on installing the receiver, see the installation guide included with your GPS receiver.
- 8 Connect the power supply cable for the RVL Transmitter to the power supply.
- 9 Turn on the power supply for the RVL Transmitter and for the GPS Receiver.
The **Power/FLT** LCD on the RVL Receiver should glow green. If it does not, see Troubleshooting on page 9.



7 Troubleshooting

Problem	Solution
Power/Fault LED glows red	<ul style="list-style-type: none">• Fibre optic cable is not connected.• Fibre optic cable is connected but antenna is not connected.
No light	<ul style="list-style-type: none">• User supplied GPS receiver is not connected.• User supplied GPS receiver is not providing sufficient DC bias to power the RVL Receiver

8 Specifications

8.1 RVL-1 Transmitter

Frequency	GPS L1/L2/L5/L-Band 800MHz-1800MHz
Termination	50Ω
Power	
Power Requirements	12V-24V AC or DC
Power Consumption	60mA typical 600mA max
Size & Weight	
Size	3.71 × 6.1 × 4.92 in 94.20 × 155.0 × 125.1 mm
Weight	< 3.0 lbs (1.36 kg)
Environment	
Relative Humidity	0-100% condensing
Temperature (Operating)	-40° to 158°F (-40° to 70°C)
Temperature (Storage)	-67° to 185°F (-55° to 85°C)
Altitude (maximum)	20,000 ft. (6,096 m)
Other	
Enclosure	Die cast Aluminum, IP66 Rated
Inputs	TNC from antenna—designated for antenna gain of 34dB +6/-3dB Male 2 pin binder—series 423 12-24V AC or DC typical
Outputs	ST Type Fiber Optic—Simplex Multimode 50/125 micron
Mating Power Connector	Female 2 pin Binder—Series 423
RoHS Compliant	Yes
Antenna Bias	5VDC (Do not apply external voltage to antenna port)

8.2 RVL-1 Receiver

Frequency	GPS L1/L2/L5/L-Band 800MHz-1800MHz
Termination	50Ω
Power	
Power Requirements	5V-12VDC from GPS Receiver
Power Consumption	60mA typical
Size & Weight	
Size	1.62 × 3.2 × 1.25 in 41.20 × 81.15 × 31.75 mm
Weight	< 0.21 lbs (.92 kg)
Environment	
Relative Humidity	0-95% non-condensing
Temperature (Operating)	32° to 122°F (0° to 50°C)
Temperature (Storage)	-58° to 185°F (-50° to 85°C)
Other	
Enclosure	Extruded Aluminum
Inputs	ST Type Fiber Optic—Simplex Multimode 50/125 micron
Outputs	BNC 50Ω female
Indicators	Power/Fault LED Green—Normal Operations Red—Fault Condition
RoHS Compliant	Yes

9 Legal Notices

FCC Part 15

This device complies with Part 15 of the FCC Rules. Operation of this product is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

This equipment has been tested and found to comply within the limits for a class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced technician for help.

FCC warning

Changes or modifications not expressly approved by the party responsible for compliance with the FCC Rules could void the user's authority to operate this equipment.

DHHS and FDA safety certification


This product is made and tested to meet safety standards of the FCC, requirements and compliance with safety performance of the U.S. Department of Health and Human Services, and also with FDA Radiation Performance Standards 21 CFR Subchapter J.

California Proposition 65

Warning

This product, its packaging, and its components contain chemicals known to the state of California to cause cancer, birth defects or reproductive harm. This notice is provided in accordance with California's Proposition-65

1999/5/EC

Marking by the symbol  indicates compliance of this equipment to the Radio and Telecom Terminal Equipment Directive 1999/5/EC. Such marking is indicative that this equipment meets or exceeds the following technical standards:

- EN 55022:1998 (CISPR 22) Information technology equipment. Radio disturbance characteristics.
- EN 60950-1:20006 Safety of Information Technology Equipment
- EN 50083-1: 1997 Electromagnetic Compatibility—Generic Immunity standard
- EN 300 328 v1.7.1 Electromagnetic Compatibility and Radio Spectrum Matters (ERM); Wideband transmission systems
- EN 301 489-17 Electromagnetic Compatibility and Radio Spectrum Matters (ERM): Special conditions for 2,4 GHz wideband transmission systems and 5 GHz high performance WLAN equipment.

Laser Safety



This device uses a class 1 laser. A class 1 laser is safe under all conditions of normal use