



ADL SLR3 User's Guide

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License required prior to operation of radio communication equipment.



Cautions and Warnings

Throughout this manual this symbol is used to indicate caution or warning. Please pay particular attention to these items to assure safe and reliable operation of your radio modem product.

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Introduction

Welcome

Thank you for purchasing the ADL SLR3 for use with your survey system. The ADL SLR3 is an advanced, high speed, wireless data link that is designed specifically for GPS/RTK applications. Your success in using the ADL SLR3 is our primary goal. We stand behind our product with expert support and service. We welcome your comments and questions.

Scope

This guide provides information concerning the use of ADL SLR3 radio modem products with Leica Geosystems GNSS sensors. Leica Geosystems' GS10/GS15 User's Manual should be referenced for general information concerning radio and GPS equipment integration.

The ADL SLR3 is a radio modem receiver that is compatible with the Pacific Crest PDL and RFM96 product families of radio modems. The ADL SLR3 is designed specifically for integration with Leica Geosystems GS15 sensor. Its small size, light weight and power efficient operation provide superior performance.

Two varieties of the SLR3 radio are available to cover the frequency range from 390 MHz to 470 MHz:

- SLR3-1 (390-430 MHz)
- SLR3-2 (430-470 MHz)



Figure 1 – ADL SLR3

Note Concerning this Guide

We believe that the ADL SLR3 system provides the best value and performance for the user. As such, we provide our equipment in complete turnkey systems, including all of the items necessary for operation with your GPS.

You may have purchased your ADL SLR3 from a third party. On occasion, the bundled product provided by these sources may differ from the kits provided directly from Pacific Crest . If this guide does not accurately reflect the equipment that you received, please contact your supplier for specific instructions concerning the setup of items that differ.

Features and Benefits

Receives Fast Over-the-Air Data Rate

Reduced latency provides better GPS position information

Lower power consumption allows longer field operation

- Greater throughput handles GPS RTK correction

Rugged Construction

Designed specifically for GPS RTK field surveying

Water tight operation stands up to bad weather conditions when mounted in GNSS system

- Built-in mounts simplify integration with the GS15 GNSS sensor

Compatible

Interoperable with Leica and Pacific Crest PDL products

- Benefit by the latest technology with your existing equipment
- Facilitates GPS equipment mix and match
- Provides upgrade path for existing installations

Using the ADL SLR3

Configuration

The ADL SLR3 is configured using Pacific Crest 's ADLCONF software. You must use the Leica Geosystems GEV231 adapter cable (P/N 767803) to connect the SLR3 radio to a PC for configuration. Configuration parameters define both the serial interface between the PC and the ADL SLR3 and the over-the-air inter-radio link. Please refer to the ADLCONF User's Guide for a complete description of the configuration software utilities. Both ADLCONF software and its manual are available for free download from <http://www.PacificCrest.com>.

Upon receiving your ADL SLR3 radio modem, connect it to a PC using the GEV231 adapter cable. Run ADLCONF, click the Connect button to link with the SLR3 radio. Then click **File > Export** and save a copy of the default configuration on your PC. You can re-install this configuration at any time by clicking **File > Import** and selecting this original configuration file.

The factory default settings are as follows:

Radio Link Rate:	9600
Modulation Type:	GMSK
Sensitivity:	High (Rover)
Scramble Control:	On
Forward Error Correction:	Yes
Transmit Retries:	10
TX ACK Timeout:	10
Local Address:	0
Destination Address:	255
TX Delay:	2

Serial Interface

PC Baud Rate:	38400
Parity:	None
Soft Break Disabled:	Yes
Protocol Type:	Transparent with EOT Timeout
EOT Timeout:	50
EOT Character:	(not used)

Operation

Before operating your ADL SLR3, identify if authorization or a license for the use of radio equipment is required in your country. It is the responsibility of the equipment owner to comply with all regulatory rules and procedures.



Although transmitting without an antenna should not damage the ADL SLR3, it is not recommended.

Mounting

The SLR3 is easily inserted into the Leica Geosystems GS15 receiver. For details please refer to the Leica Geosystems GS15/GS10 User manual.

Indicator LEDs

There are four LEDs on the ADL SLR3 as indicated in the table below:



Figure 2 – ADL SLR3 LEDs

LED Label	Color	State	Meaning
⏻	Power	Off	Device not powered
		Steady	Device is powered
📶	Signal Strength	Off	No data detected on carrier frequency
		Steady	Data detected; signal strength is good
↔	Rx/Tx	Off	No data transferred via the radio interface
		Flashing	Data transferred via the radio interface. LED flashes once for every data packet transferred.
!	Mode	Off	Radio is in Data Mode, ready for data communication
		Steady	Radio is in Programming Mode, connected to ADLCONF

Technical Specifications

General Specifications	
DTE - DCE Interface	CMOS , 115.2 kbps maximum
User Interface	Refer to Pin-Out diagram in Appendix A
Power	
External	6.0 – 30.0 VDC, +/- 0.50 VDC
During RX	0.6 Watts nominal @ 6.0 VDC 0.75 Watts peak @ 30.0 VDC

During TX	7 Watts nominal @ 6.0 VDC, 1 Watt RF output 7.5 Watts peak @ 30.0 VDC, 1 Watt RF output
Antenna	
External	50 Ohm, RF Connector in D-sub connector
Modem Specifications	
Link Rate/Modulation	19200 bps/4FSK 9600 bps/4FSK 19200 bps/GMSK 16000 bps/GMSK 9600 bps/GMSK 8000 bps/GMSK 4800 bps/GMSK
Link Protocols	Transparent EOT/EOC, Packet-switched, TRIMMARK™, TRIMTALK™, SATEL®
Forward Error Correction	Yes
Radio Specifications	
Frequency Bands	390-430, 430-470 MHz
Frequency Control	Synthesized 12.5 kHz tuning resolution Frequency stability +/- 1PPM
RF Transmitter Output	0.1 – 1 Watt (Programmable)
Sensitivity	-110 dBm (BER 1 x 10 ⁻⁵)
Type Certification	All models are type accepted and certified for operation in the U.S., Europe, Australia and Canada FCC, IC, EU,NZ, Australia ETS300-113-2 (See Appendix)
Environmental Specifications	
Operating Temperature (Receiver)	-40° to +85° C (-40° to +185° F)
Operating Temperature (Transmitter)	-40° to 65° C (-40° to 149° F) NOTE: Housing enclosure can withstand 85° C
Storage Temperature (Receiver/Transmitter)	-55° to +85° C (-67° to +185° F)
Vibration / Shock Tolerance	Vibration: ISO 9022-36-08 (sinus/ 10Hz-500Hz/ +/- 0.35mm/5g/ 1 Oct./min/ 10 cycles/ each axis); Operating. Shock: ISO 9022-31-06 (25g/6ms/halfsine 4000 shocks in each axis and direction); Operating.
Mechanical Specifications	
Dimensions	7.2 cm W x 6.37 cm D x 11.7 cm H (2.83" W x 2.5" D x 4.59" H)
Weight	82 grams (2.99 oz.) 204 grams (7.2 oz.) with additional cover, clamp & screws
Data/Power Connector	D-sub type, 17-pin (See pin specifications in Appendix A)

Service and Support

Contacting Pacific Crest

Quality, technology and service are the hallmarks of Pacific Crest. We provide easy access to our customer service department to keep you running efficiently.

Headquarters

Pacific Crest
510 DeGuigne Drive
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1-408-481-8070 (Outside the U.S.)
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Tel: +31-725-724-408
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E-mail: Support@PacificCrest.com

RMA form: [RMA Request](#)

Repair Info: PCCservice@PacificCrest.com

Web: www.PacificCrest.com

Support hours are 8 AM to 5 PM Pacific Time. Please visit our [website](#) for up-to-date news and product announcements. Firmware and software upgrades are also available from our website, in most cases free of charge.

Warranty

One-Year Limited Warranty

This warranty gives you specific legal rights. You may also have other rights which vary from state to state or area to area.

Pacific Crest warrants ADL SLR3 family products, including cables and batteries, against defects in materials and workmanship for a period of one year from receipt by the end user.

Exclusions

Should Pacific Crest be unable to repair or replace the product within a reasonable amount of time, a refund of the purchase price may be given upon return of the product.

The warranty on your ADL SLR3 radio modem shall not apply to defects resulting from:

- Improper or inadequate maintenance by the customer
- Unauthorized modification
- Operation outside of the environment specifications
- Negligence or misuse

Warranty Limitations

This warranty set forth above is exclusive and no other warranty, whether written or oral, is expressed or implied. Pacific Crest specifically disclaims the implied warranties of merchantability and fitness for a particular purpose.

Appendix A - Connectors and Cables

Data/Power Connector

The ADL SLR3 radio modem uses a D-sub type, 17-pin data/power connector.

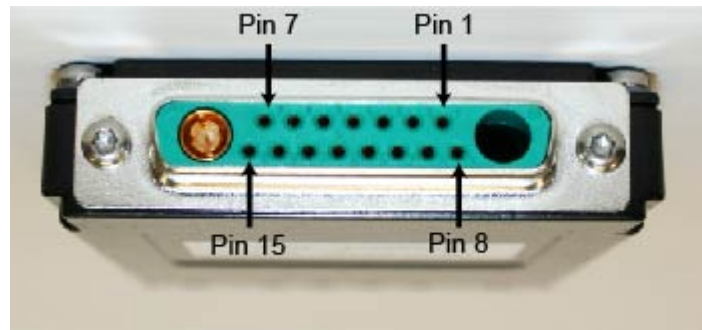


Figure 3 – ADL SLR3 Data Connector

Pin No	Signal	Type and Direction	Description
1	NC	-	-
8	PWR	6V Input	6V, +-10% DC Supply Voltage Input
2	Tx	LVTTTL Input	Transmit Data sending from DTE
3	Rx	LVTTTL Output	Receive Data sending from ADL SLR3
5	RTS	LVTTTL Input	Request to Send. Raised by DTE when it wishes to send.
6	CTS	LVTTTL Output	Clear to Send. Raised by ADL SLR3 in response to TRS from DTE
7	NC	-	-
14	ID	LVTTTL, input/output	1-Wire ID line
13	GND	GND	Signal and Chassis Ground
9	NC	-	-
15	NC	-	-
4	GPO/DCD	LVTTTL output	General Purpose output / Carrier Detect output from ADL SLR3
10	GND	GND	Signal and Chassis Ground.
11	NC	-	-
12	NC	-	-
A1	NC	-	-
A2	RF1	Antenna Port	UHF-Antenna 390-470MHz

Antenna Connector

The ADL SLR3 requires a TNC antenna or feed cable system that is impedance matched to 50Ω. We recommend the selection of an antenna that has a low VSWR (less than 1.5:1) and that has been tuned for operation in the band of the ADL SLR3.





Cable Products

Pacific Crest manufactures a wide variety of high-quality cables to support its radio modems. If your cable is lost or broken, please contact your Pacific Crest sales representative to discuss your cable requirements or you may order accessory products online at www.PacificCrest.com.

Appendix B – Safety Information

Adhere to the following directions when operating the ADL SLR3 radio modem to anticipate and avoid operational hazards.

Permitted Uses	Prohibited Uses
Data reception for Leica GS15 GNSS system	Use of ADL SLR3 without instruction
Transmit/Receive applications	Opening or tampering with the radio modem
Suitable for use in populated environments	Use in explosive environments
Use in rain or humid environments for limited periods of time	Use with non Pacific Crest approved accessories
	Modification or conversion of the radio modem

-  Do not operate without an antenna.
-  Do not tamper with the device. If not functioning, refer the equipment to an authorized Pacific Crest service center.
-  To avoid potential interference with other equipment in your GPS system, use only equipment and accessories approved by Pacific Crest .
-  Do not operate the device if damaged. Dispose of damaged equipment in accordance with approved regulations in your region.

ADL SLR3 radio modem products are designed to comply with the following national and international standards and guidelines regarding exposure of human beings to radio frequency electromagnetic energy, in addition to protection against harmful interference of neighboring electrical equipment:

Part 15 of the FCC Report and Order 96-326 (August, 1996)

IEC 61000-4-3 Level 3 “Radiated, radio-frequency, electromagnetic field immunity”

IEC 61000-4-6 Level 3 “Immunity to conducted disturbances, induced by RF fields”

IEC 61000-4-8 Level 4 “Power frequency magnetic field immunity”

IEC 61000-4-2 Level 4 “Electrostatic discharge (contact & air discharge)”

ETSI EN 300 113-2

ETSI EN 300 489-5



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