

## Limited Warranty

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Comar Systems Ltd warrants this product to be free from defects in materials and manufacture for one year from the date of purchase. Comar Systems Ltd will, at its sole option, repair or replace any components that fail in normal use. Such repairs or replacement will be made at no charge to the customer for parts and labour. The customer is, however, responsible for any transportation costs incurred in returning the unit to Comar Systems Ltd.

This warranty does not cover failures due to abuse, misuse, accident or unauthorized alteration or repairs.

The above does not affect the statutory rights of the consumer.

*Note: Every effort has been made to ensure that all information contained in this manual is accurate at the time of going to press. However AIS is a new technology and the legislation is subject to change. We therefore cannot take any responsibility for the content of this manual and advise that you take normal steps to ensure that the information is at its most current when you are reading this manual.*

# *Installation and Quick Reference Guide*

## SLR-200/G AIS Receiver



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## Disclaimer

*This product is designed to aid navigation and should be used to augment normal navigational procedures and practices. It is the users responsibility to use this product prudently. Neither Comar Systems Ltd, nor their distributors or dealers accept responsibility or liability either to the product user or their estate for any accident, loss, injury or damage whatsoever arising out of the use or of liability to use this product.*

## Transmission Specification:

### Static information

Every 6 min or, when data has been amended, or on request.

### Dynamic information

This is dependent on speed and course alteration. **Table 1**

### Class "A" shipborne mobile equipment reporting intervals

Ship's dynamic conditions	Reporting interval
Ship at anchor or moored and not moving faster than 3 knots	3 Minutes
Ship at anchor or moored and moving faster than 3 knots	10 Seconds
Ship 0-14 knots	10 Seconds
Ship 0-14 knots and changing course	3 1/3 Seconds
Ship 14-23 knots	6 Seconds
Ship 14-23 knots and changing course	2 Seconds
Ship >23 knots	2 Seconds
Ship >23 knots and changing course	2 Seconds

### Caution: Deadlines for mandatory fitment of AIS Transponders

AIS is a recently introduced system that has been designed to improve safety at sea and collision avoidance. The mandatory requirement for vessels to fit Class A AIS transponders at the time of print depends on the size of the vessel, where it trades and where it is based, however, this could still be subject to change.

Currently, international legislation requires all such ships over 300 tons engaged in international voyages to fit AIS Class A transponders no later than 31 December 2004.

The deadline for ships not engaged in international voyages remains at 1 July 2008, but national authorities can move this date forward in their own waters.

In the USA different regulations apply, more details can be found on [www.uais.org/CarriageRequirements.htm](http://www.uais.org/CarriageRequirements.htm)

## Fault finding

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### No power light is displayed

- Check the power supply and that the unit is connected correctly to a 12 or 24 volt DC supply
- Check the polarity of the supply is correct (red = +ve and black is -ve).

### Channel 1 and Channel 2 lights do not flash

- Check that a VHF antenna is fitted and correctly connected.
- Check that the antenna is correctly positioned – i.e. at a suitable location to visibly 'see' vessels.

*Hint: Until the deadlines for mandatory fitment are reached, ships may not have fitted a Transponder, therefore if a ship is sailing past and no signal is received there may be no fault with the SLR-200 receiver.*

### Channel 1 and Channel 2 lights flash but no data is received

If the red channel lights flash then data is being received from nearby vessels.

- Check that the correct data cable is connected to the PC or NMEA device.
- Check on the PC application or device that the correct port is assigned and the correct baud rate is setup. The correct baud rate is 38400.

### I can receive ships on my display but no names are shown.

- Remember that the names of ships as well as other static information is only sent every 6 minutes or when requested by another station.

## Product Support

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## Introduction

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### Background to AIS

AIS is an Automatic Identification System. For improved safety and specifically for collision avoidance reasons, vessels need to know the position, details and navigational intentions of other vessels within VHF range.

IMO regulations covering most commercial vessels worldwide, have now been passed requiring that AIS transponders are fitted by December 2004. The transponders use VHF frequencies to

- Transmit details of their own vessel and
- Receive details from other vessels or navigation aids within VHF range.

### The SLR-200

The SLR-200 is a low cost AIS (Automatic Identification System) receive only unit, designed specifically for the Small Commercial, Leisure, Fishing Boat and Vessel Monitoring Markets where vessels are currently not mandated to transmit AIS information.

Connected to an on board PC running compatible software, or Plotter, AIS data transmitted from ships within range can be displayed on the screen giving the skipper or navigator a visual interpretation of the traffic within VHF range.

Information from AIS transponders carried by most vessels or navigation aids are transmitted at different rates as specified in Tables 1 (see Page 10)

*(Information source ITU Recommendations Technical Document ITU-R M.1371-1)*

Information transmitted from vessels fitted with AIS transponders includes:

- |                  |                       |                     |
|------------------|-----------------------|---------------------|
| • Name of vessel | • Call Sign           | • Type of vessel    |
| • Speed (SOG)    | • Course (COG)        | • Heading           |
| • Position       | • Navigational status | • Vessel dimensions |
| • MMSI number    | • IMO number          | • Draft             |
| • Rate of turn   | • Size of vessel      | • Status            |
| • Destination    | • ETA                 | • Cargo             |

*Note: Not all the above information is necessarily transmitted by each vessel.*

To keep up to date with information about AIS compliance and the current status on different regulations surrounding the fitting of AIS transponders we recommend you visit [www.uais.org/CarriageRequirements.htm](http://www.uais.org/CarriageRequirements.htm)

## Contents of this Box

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Before proceeding with the installation of the SLR-200, please check the content of the box, which should include:

- ❑ The SLR-200 AIS receiver with trunion mounting bracket.
- ❑ Interface cable for connection to PC
- ❑ Interface cable for NMEA connection
- ❑ Power cable (12/ 24 volts)
- ❑ Installation and quick Reference Guide.

## Installing the SLR-200 Receiver

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### Installing the antenna

The SLR-200 Receiver is **not** supplied with a VHF antenna as the type of antenna and cable requirements differ from vessel to vessel. An antenna can be acquired from a marine electronics outlet.

**Hint:** The antenna connector type is BNC, 50 ohms.

### Antenna location

**Hint:** The AIS VHF antenna should be separated as far as possible from the voice VHF to avoid unnecessary interference.

**Hint:** Best separation is achieved by installing the antennas over each other or on separate sides of the mast.

**Hint:** The VHF antenna should be mounted at least 3 metres away from and out of the transmitting beam of high-power transmitters or other VHF antenna installations.

**Hint:** Mount the antenna with a relatively clear view of the horizon. Large obstructions that might shade the antenna should be avoided.

**Hint:** The higher the antenna is located, the longer the range.

## Technical specifications

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SLR-200 is a compact dual channel synthesised VHF receiver designed to receive and decode transmissions from vessels fitted with Class A AIS transceivers.

### Electrical

Power supply range: 9 - 30 Volts DC

Power consumption: 400mW

### Output

Baud rate: 38400 Baud (38.4Kb) or 4800 (internal link)

Format: ITU/ NMEA 0183

Output message: VDM

### Receiver

Frequency: AIS 161.975 MHz

AIS 162.025 MHz

Channel spacing: 25KHz

Sensitivity: -112dBm

Demodulation: GMSK

Data Rate: 9600

Antenna Impedance: 50 ohms

### Physical

Dimensions: Length: 140mm,

Width: 120mm,

Height: 50mm

Weight: 600g

Mounting: Trunion bracket

Connectors: Antenna BNC

Output port: 9 pin D socket

Power: 2-pole plug

Designed to meet:

IEC 61993-2

CE Approval to EN 60945: EN 6100-6-1/2

FCC part 15

## Installing the SLR-200G Receiver

The SLR-200G contains an integral GPS receiver allowing positional data and AIS data to be output together from the receiver.

A standard 5 volts DC GPS antenna needs to be connected to the TNC connector on the rear of the SLR-200G for the GPS receiver to work.

By default the GPS receiver will output the following NMEA messages: GLL,GGA,GSA,GSV,RMC, DTM ,VTG, ZDA.

The frequency and message types of the GPS output can be controlled by a special PC program available from Comar.

*Note: the NMEA input facility through the 9 pin D connector is disabled on the SLR200G*

### GPS Receiver Technical Specification:

Channels: 12 Parallel Channels

Frequency: 1575.42 MHz

WAAS : Yes

Datum: default WGS84

Update rate: 1 sec

Hot start: 6 sec.

Warm start: 35 sec

Cold start: 45 sec.

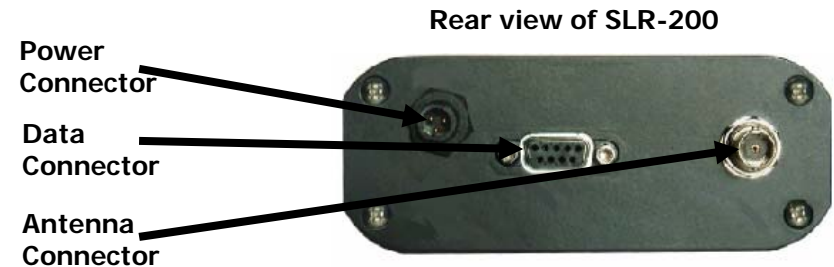
### Mounting the SLR-200 receiver

The SLR-200 receiver comes with a trunnion mount to secure to a suitable bulkhead or shelf.

*Hint: Select a location away from excessive heat sources, avoid high levels of vibration and shock*

*Hint: Not designed to be mounted externally*

### Connections



#### Power

Connect the power lead to a 12 or 24-volt DC supply.

*Hint: This should be connected to a breaker/ switch panel preferably with a fuse rated at 1 Amp. Pin connections are shown below.*

Pin 1 RED Positive +9 to +30 volts

Pin 2 BLACK Negative

#### Data

The data connector enables one of the two cables supplied to connect either to a PC serial port (or USB port by using a suitable USB – serial adaptor cable) or a NMEA device e.g. plotter or GPS. Physical connections detail of both cables is provided overleaf.

### 9 Pin D – 9 Pin D

Use this cable to connect the SLR-200 receiver to a PC serial port.

**Hint:** *If you do not have a free serial port then you can use a USB port to receive the data. To facilitate this you need to purchase a USB to serial port adaptor. Make sure the adaptor has a driver for your operating system.*

The following physical connections are given;

NMEA Output to Plotter	4= Signal (+)	1= Ground
RS232 Output to PC	2= Signal (+)	5= Ground
NMEA Input from GPS	8= Signal (+)	9= Return

### 9 Pin D – bare ends

1	BROWN	NMEA Output -
4	YELLOW	NMEA Output +
8	GREY	NMEA Input +
9	BLACK	NMEA Input -

Other connections (for advanced use)

2	RED	+ RS232 Output
3	ORANGE	+ RS232 Input
5	GREEN	- RS232 Ground Return
6	BLUE	Engineering Input
7	VIOLET	Engineering Output

The output data is a VDM string at 38.4k baud rate.

The NMEA input is capable of accepting any sentences at 4800Bd and multiplexing them with the VDM sentence to the NMEA/RS232 output.

### Correct operation

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Operation of the SLR-200 unit is fully automatic and only requires power, VHF and data cable connection.

On powering up the unit

- The green light marked ON should illuminate.
- The channel 1 and 2 lights should flash momentarily when information from nearby transceivers is received.

Data is then output for visual or textual viewing on compatible electronic charting systems or other systems or devices.

### Range of AIS

The AIS reception range is similar to that normally associated with Marine VHF Radiotelephone. Range is dependent on height of antenna and also type of antenna, the higher and better antenna installed the greater the reception range.

Typically an antenna mounted on the rail of a yacht will achieve 15 miles, mounted on the masthead will increase this to 20 miles. Shore based reception is governed by local terrain, however an open view to the sea with an antenna mounted in the clear at a height of approximately 20 metres will achieve 25 miles plus, higher gain antenna can be used on shore to further increase the range.