

# R100 Series DGPS Receiver

## High Accuracy, Multipurpose Receivers



### R100

Complete your work quickly and accurately with the R100™ Series DGPS Receiver.

Rely on consistent sub-meter performance with standard SBAS differential and Hemisphere GPS' exclusive COAST™ technology that maintains accuracy during temporary loss of differential signal.

The R100 offers many differential correction options for various environments and worldwide coverage. The simple user interface and extensive software features make the R100 the ideal solution for professional mapping, guidance and navigation applications.

Powered by  
**Crescent**

## Key R100 Series Advantages

- Feature-packed sub-60 cm DGPS Positioning
- Differential options including SBAS (WAAS, EGNOS, etc.), Radio Beacon, OmniSTAR®
- Exclusive e-Dif® option where other differential correction signals are not practical
- COAST technology maintains accurate solutions for 40 minutes or more after loss of differential signal
- Fast update rates of up to 20 times per second provide the best guidance and machine control
- Compatible with our exclusive L-Dif™ and RTK technologies, for applications requiring higher accuracy
- Uses a standard USB port for communication with PC
- The status lights and menu system make the R100 Series easy to monitor and configure



# R100 Series DGPS Receiver

## GPS Sensor Specifications

Receiver Type: L1, C/A code, with carrier phase smoothing (Patented COAST technology during differential signal outage)

Channels: 12-channel, parallel tracking (10-channel when tracking SBAS)

SBAS Tracking: 2-channel, parallel tracking

Update Rate: Up to 20 Hz position

Horizontal Accuracy: <0.02 m 95% confidence (RTK<sup>1,2</sup>)  
<0.28 m 95% confidence (L-Dif<sup>1,2</sup>)  
<0.6 m 95% confidence (DGPS<sup>1,3</sup>)  
<2.5 m 95% confidence (autonomous, no SA<sup>1</sup>)

Cold Start: 60 s (no almanac or RTC)

## L-Band Sensor Specifications

Channels: Single channel

Frequency Range: 1530 to 1560 MHz

Satellite Selection: Manual or Automatic (based on location)

Startup and Satellite Reacquisition Time: 15 seconds, typical

## Beacon Sensor Specifications

Channels: 2-channel, parallel tracking

Frequency Range: 283.5 to 325 kHz

MSK Bit Rates: 50, 100, and 200 bps

## Communications

Serial Ports: 2 full duplex

USB Ports: 1 Communications (USB-B)

Interface Level: RS-232C

Baud Rates: 4800 - 115200

Correction Input / Output Protocol: RTCM SC-104

Data Input / Output Protocol: NMEA 0183

Raw Data: Proprietary binary (RINEX utility available)

Timing Output: 1 PPS (HCMOS, active low, falling edge sync, 10 kΩ, 10 pF load)

Event Marker: Yes

## Environmental

Operating Temperature: -30°C to +70°C (-22°F to +158°F)

Storage Temperature: -40°C to +85°C (-40°F to +185°F)

Humidity: 95% non-condensing

Shock and Vibration: EP 455

EMC: FCC Part 15, Subpart B, Class B  
CISPR 22, CE

## Power

Input Voltage Range: 8 to 36 VDC

Reverse Polarity Protection: Yes

Power Consumption: 3 W

Current Consumption: < 250 mA @ 12 VDC

Antenna Voltage Output: 5.0 VDC

Antenna Short Circuit Protection: Yes

## Mechanical

Enclosure: Powder-coated aluminium

Dimensions: 16.0 L x 11.4 W x 4.5 H (cm)  
6.3 L x 4.5 W x 1.8 H (in)

Weight: 540 g (19.0 oz)

LED Indicators: Power, GPS lock, DGPS position

Power Connector: 2-pin ODU

Data Connectors: DB9-female x2

Antenna Connector: TNC-female

## R100 Series Configuration Options

	R100	R110	R120	R130
GPS	●	●	●	●
SBAS	●	●	●	●
Beacon		●		●
OmniSTAR			●	●

Authorized Distributor:



<sup>1</sup> Depends on multipath environment, antenna selection, number of satellites in view, satellite geometry, and ionospheric activity

<sup>2</sup> Up to 5km baseline length

<sup>3</sup> Depends also on baseline length

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# A21 and A31 Antennas



## A21

The A21™ antenna is designed to help maintain tracking of GPS and differential correction signals in challenging environments. Sometimes keeping the antenna level and away from electrical noise is just not possible. With a metal base, lower profile, improved multi-path mitigation, and ability to filter out an additional 30 decibels of radio band frequencies, A21 offers superior noise rejection. A21 is designed for use with Hemisphere GPS Crescent® and Crescent Vector II™ receivers.

### GPS, SBAS and L-Band (OmniSTAR®) Antenna

#### GNSS Sensor

GNSS Reception:	GPS L1, SBAS, and OmniSTAR
GNSS Frequency:	1.525 to 1.585 GHz
LNA Gain:	30 dB
LNA Noise:	2.0 dB, typical

#### Power Input

Input Voltage:	3.3 to 12 VDC
Input Current:	24 mA, typical

#### Mechanical

Enclosure:	Aluminium base with ASA plastic cap
Dimensions:	70mm H x 130mm D (2.9 H x 5.1 D in)
Weight:	380 g (13.4 oz)
Mount:	5/8 inch female thread
RF Connector:	TNC (straight)

#### Environmental

Storage Temperature:	-40° C to +85° C (-40°F to +185°F)
Operating Temperature:	-40° C to +70° C (-40°F to +158°F)
Enclosure Rating:	IP69K
Shock and Vibration:	EP455



## A31

The A31™ antenna is designed to help maintain tracking of GPS, Beacon and differential correction signals in challenging environments. Sometimes keeping the antenna level and away from electrical noise is just not possible. With improved multi-path mitigation and ability to filter out an additional 30 decibels of radio band frequencies, A31 offers superior noise rejection. The A31 is designed for use with Hemisphere GPS Crescent and Crescent Vector II receivers.

### GPS, SBAS, L-Band (OmniSTAR) and Beacon Antenna

#### GNSS Sensor

GNSS Reception:	GPS, SBAS, L-Band (OmniStar) and Beacon
GNSS Frequency:	1.575 GHz (L1)
LNA Gain:	30 dB
LNA Noise:	< 2.0 dB

#### Power Input

Input Voltage:	5 to 12 VDC
Input Current:	50 - 60 mA

#### Beacon Sensor

Beacon Frequency:	283.5 - 325 KHz
Beacon LNA Gain:	30 dB

#### L-Band Sensor

L-Band Frequency:	1.525 - 1.585 GHz
L-Band LNA Gain:	30 dB

#### Mechanical

Enclosure:	Lexan
Dimensions:	104.0 H x 145.0 D mm (4.09 H x 5.71 D in)
Weight:	734.25 g (25.8 oz)
Mount:	1" coarse thread (5/8" adapter available)
RF Connector:	TNC

#### Environmental

Operating Temperature:	-30°C to +70°C (-22°F to +158°F)
Storage Temperature:	-40°C to +85°C (-40°F to +185°F)
Enclosure Rating:	IP69K
Shock and Vibration:	EP455
Humidity:	96% non-condensing