

SOKKIA

Radian Radian IS

High-Accuracy GPS Systems



The Radian System

Radian is a compact, dual-frequency receiver capable of real-time kinematic (RTK) and post-processing jobs. Designed to work right out of the box, Sokkia's Radian system can be used in any position-based application that requires high-accuracy results. Both receivers can be configured from an L1 receiver to a high-end L1/L2 RTK package, enabling you to meet the challenges of your job and budget, and easily upgrade to the next level. The system can be used to achieve centimeter-level accuracy for RTK tasks and millimeter-level accuracy for post-processing jobs. Couple these features with its lightweight, rugged design, and the choice is simple.

- Radian GPS Receiver

- GPS SK-600 Antenna

- Windows® CE data collector and software

- Ergonomic rover backpack and base soft case

- PDL RTK radio data link

- Spectrum Survey Suite® V3 Software



A tool for everyone

The Radian Receiver

The Radian receiver is designed to respond to the survey tasks that you need to perform and withstand the challenges of your work in the field. Every receiver is shipped ready for RTK and post-processed surveys and can be used as either a base or a rover. No software, hardware, or upgrade modifications are required. These features enable you to use real-time data collection to reduce overhead costs and time to finish the job.



- **Power and versatility at your fingertips.** A dual-frequency, 12-channel, all-in-view, parallel tracking receiver that stores data on an accessible PCMCIA memory card, has two communication ports capable of supplying power and easy to read LED status indicators.
- **While others are still looking for the haystack, you will have found the needle.** Centimeter-level real-time accuracy and millimeter-level post-processing accuracy.
- **Room for everything except errors.** L1 C/A-code and L2 P-code with full-carrier phase measurements with a patented narrow lane correlator to provide pure, undisturbed data so you can achieve optimum results.

The Radian IS System

Radian IS integrates the receiver, antenna, memory and batteries into one system. A fully integrated system means there are fewer cables to connect, making your job easier. Radian IS is a dual-frequency, survey grade receiver that can perform both real-time kinematic (RTK) and post-processed surveys. It is ideal for a variety of applications, including topographic mapping, control surveys and construction staking. Radian IS is a valuable tool that will fit easily within your environment and your budget.

- Fully integrated receiver, antenna, memory and batteries into one system
- Spectrum Survey Suite® V3 processing and adjustment software
- Windows® CE data collector and software
- Rugged, field-ready carrying case
- PDL RTK radio data link



A tool for any job

The Radian IS Receiver

The essence of the Radian IS system is efficiency. The fully-integrated design enables you to work from start up to finish in less time, with fewer people and with less cost. By integrating the receiver, antenna, memory and batteries into one lightweight and rugged package, Sokkia's Radian IS system requires fewer cables. These features, combined with Pulse Aperture Correlator (PAC) Technology and Pinwheel Technology (patent pending for both), provide comprehensive tracking capability with complete multipath rejection.



- **Reflective of our No. 1 priority: Accuracy.** PAC and Pinwheel technologies provide comprehensive tracking capability for pinpoint precision.
- **More power to you.** Fully integrated design, and RTK and post-processing features enable you to tackle a variety of tasks without having to switch equipment to finish the job.
- **Don't just do the job; Do the job quickly.** Fast initialization improves your efficiency in the field.
- **A brighter approach.** LED fuel gauge display indicates estimated operating life and memory remaining, satellite tracking status and an occupation time indicator.

PAC Technology

Patented Pulse Aperture Correlator (PAC) Technology provides tracking capability in any environment with the latest digital signal processing techniques. This setup provides tracking capability in the presence of multipath, while also strengthening pseudo-range accuracy.



Pinwheel Technology

Find yourself on the road less traveled? No problem. Pinwheel Technology provides reliability through high multipath environments. That means you can receive signals, track satellites and gather high-accuracy measurements in harsh environments.

The blocking power of an entire football team. Pinwheel Technology blocks multipath to the same degree as a choke ring antenna, but in a small, lightweight design.

Pinpoint precision

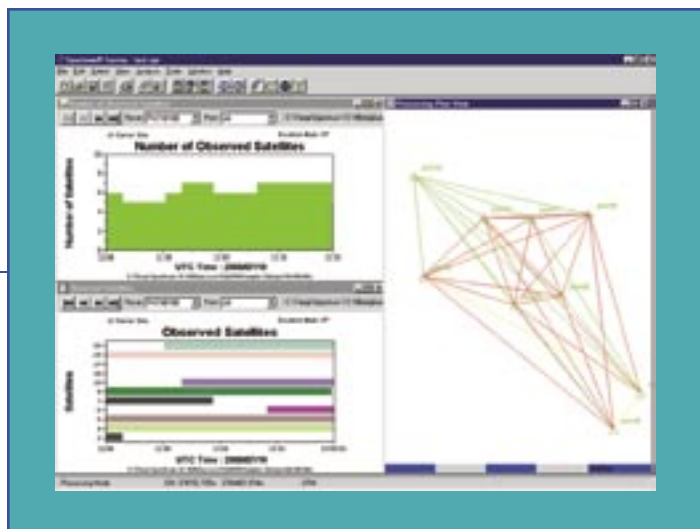
Spectrum Survey

Spectrum Survey is an easy-to-use software package that handles all aspects of managing and processing Radian and Radian IS receiver data. This user-friendly software includes data processing, network adjustment, and analysis and blunder detection tools to provide you with everything you need to complete any job quickly and easily.

- **Take on tougher tasks because you can.** Eliminate the guesswork from data collection by predicting satellite location, geometry and visibility before leaving the office.

- **Two words: complete control.** Spectrum Survey is an intuitive platform that is simple to learn and easy to use. A step-by-step process guides you through project creation, while analysis tools enable you to quickly assess the quality of your results.

- **The difference between doing a job and finishing it.** Export your data in to a variety of formats, including SDR, SGL, IOB and ASCII. Other export formats are available using ProLINK software, which is included.



SDR Level 5 CE

Built on a wealth of experience with the SDR 2, 22, 24 and 33 series Electronic Field Books, the SDR Level 5 CE delivers multiple options in one single package.

The SDR's full functionality increases your productivity, offering topographic survey, stake out, roading and coordinate geometry (COGO) functionality.

The industry-standard SDR file format provides instant compatibility with most desktop software packages today. Combine the familiar SDR functionality with the versatility of a CE-based platform, and the SDR Level 5 CE cuts through the clutter.

It's hard to find a job that can't be handled. The SDR Level 5 CE is the link between you and any job.

- **Prepare for the Job.** Successful surveys begin before you get to the job site. Pre-load an existing job and information for the day ahead with SDR's familiar and intuitive workflow.
- **Do the Job.** SDR leads you through each step of the setup process simply and easily. Before you know it, you will be ready to take readings and perform topography, stake out, roading and COGO surveys.
- **Finish the Job.** Finishing the job means transferring your day's work to your computer, or to your printer. The SDR format is known and used throughout the industry, which means its use isn't restricted to just one software package.



Designed with you in mind

The SDR8100

The SDR8100 provides intuitive data collection by combining a progressive keyboard layout, high-contrast touch-screen interface with powerful and intelligent software. The SDR8100 uses the Windows® CE operating system – the standard in handheld PC platforms. Not only does it handle a variety of Sokkia software, the SDR8100 also provides the freedom to run other Windows® CE based application software.

- One-handed measurement and data collection with ergonomic triggers and one-button operation
- Lightweight, yet rugged 14-ounce packaging for easy use in the field, on a rod, or mounted on a tripod
- Easy access to data, commands and graphical views with a touch screen interface
- Provides enough memory for the biggest job, and enough battery power for a full day's work in the field
- Easy reading in any lighting conditions with multiple levels of contrast control



Applications

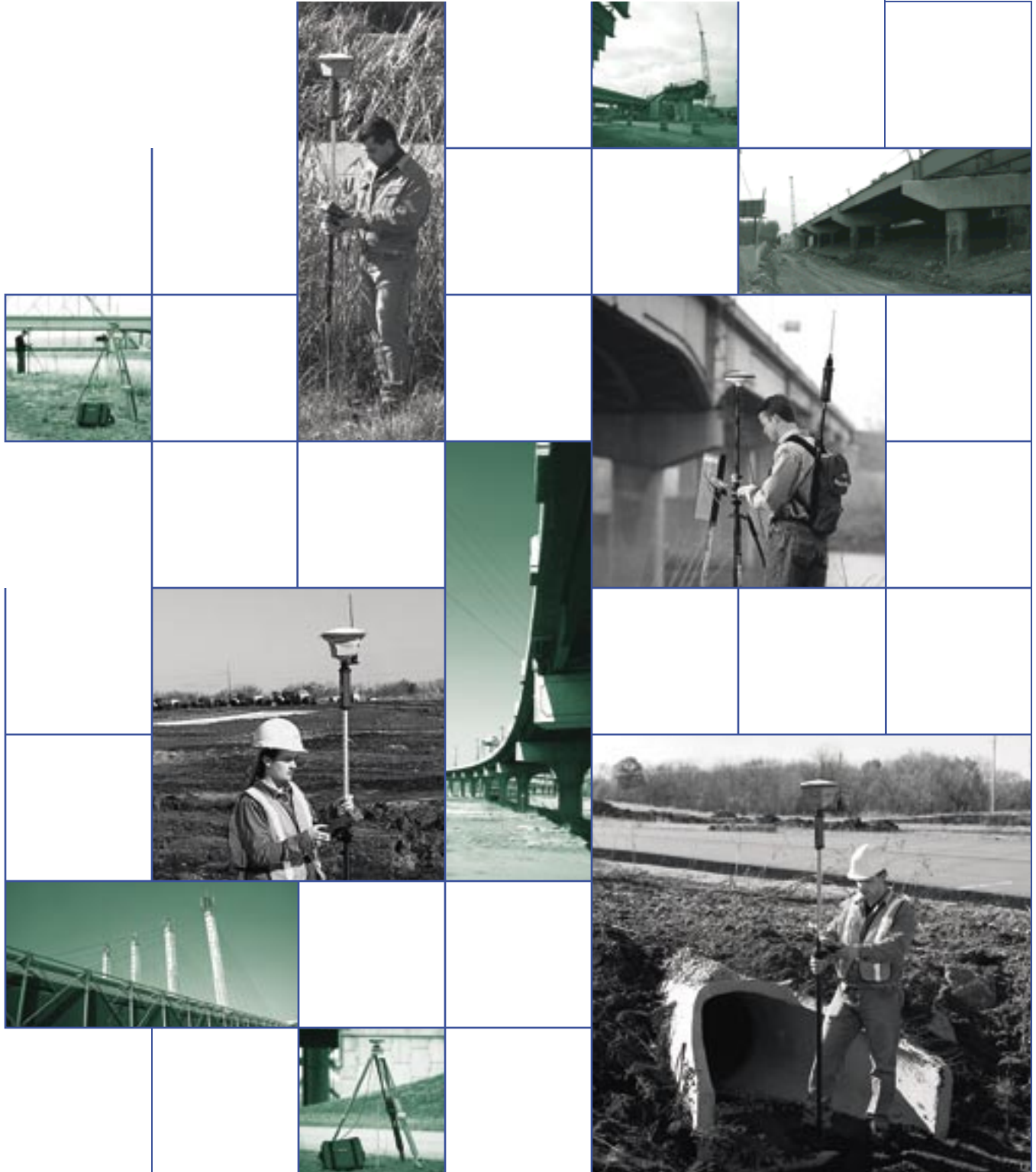
Surveying most often involves two objectives – Gathering as much detail as possible and applying that detail to your project. The design of the Radian and Radian IS systems eliminates the limitations of traditional survey methods. Whether on a city street, mountain slope, riverbank or future roadway, Sokkia's Radian and Radian IS systems provide the performance you need to accomplish any task. Whether your application is gathering details for natural resource mapping, determining as-built mapping or planning overhead power lines, Radian and Radian IS help to reduce the manpower necessary to finish the job. With Radian and Radian IS the possibilities are endless.

Post-Process Applications

- Boundary surveys
- Control densification
- Establish station pairs for total station survey
- Position aerial photo panels
- Position aerial towers

RTK Applications

- Create slopes and terraces in landscaping
- Determine cut and fill for a road project
- Map utility lines, cables and piping for building construction
- Plan haul roads, set out blasting patterns or reclamation work for the mining industry
- Position recording pods and develop maps for seismic studies



High-accuracy GPS surveying

Radian Receiver Specifications

Radian IS Receiver Specifications

Position Accuracy^a RTK ^b Static, Rapid Static ^c Kinematic, Stop-and-Go Differential GPS (DGPS)	1.0 cm + 2 ppm (horizontal)—2.0 cm + 2 ppm (vertical) 0.5 cm + 1ppm (horizontal)—1.0 cm + 1 ppm (vertical) 1.0 mm + 1 ppm (horizontal)—2.0 cm + 1.0 ppm (vertical) 0.60m CEP
Channels	12 x L1 and 12 x L2 with full code and carrier
Time to First Fix Cold Start Signal Reacquisition Data Rates	70 sec <1 sec L1, 10 sec L2 10 HZ
Operation	Single button operation (power, receiver reset and clear memory)
Display	LED display status indicators
Status Indicators	Power, battery life, satellites tracked, data logging RTK transmission and available memory
Memory	Internal, removable PCMCIA memory card (4MB card provided)
Antenna^d	External SK-600 GPS antenna (L1/L2) with Pinwheel Technology, <1mm phase center offset and multipath rejection equivalent to choke ring antenna
Physical Characters Weight Size (max. d. x h.)	1.5 kg (3.3 lb) 23 cm x 11 cm x 6 cm (9.17 in x 4.09 in x 2.24 in)
Environmental Operating Temperature Operating Temperature with batteries Storage Temperature Water Resistance Shock	-20° C to +55° C (-4° F to +131° F) -20° C to +55° C (-4° F to +131° F) -40° C to +85° C (-40° F to +185° F) RTCA/DO-160 category S (equivalent to IPX4) 1 m drop
Power Requirements Power Input Logging Sleep Mode Batteries Operating Time	+10.7 to +18 Volts DC 11 W (typical) 0.25 W 2 x camcorder batteries provided (2.3 Ah, 12 VDC, SLA) 4.5 hours for 2 external batteries (no peripheral output)
External Ports	4 x R232, 1 x external power port, 1 x antenna port
Standard Input/ Output Formats	RTCA, RTCM, CMR, NMEA-0183 out, PPS out, Mark out

Position Accuracy^a RTK ^b Static, Rapid Static ^c Kinematic, Stop-and-Go Differential GPS (DGPS)	1.0 cm + 1 ppm (horizontal)—2.0 cm + 1 ppm (vertical) 0.5 cm + 1ppm (horizontal)—1.0 cm + 1 ppm (vertical) 1.0 mm + 1 ppm (horizontal)—2.0 cm + 1.0 ppm (vertical) 0.45m CEP
Channels	12 x L1 and 12 x L2 with full code and carrier
Time to First Fix Cold Start Signal Reacquisition Data Rates	50 sec 0.5 sec L1, 6 sec L2 10 HZ
Operation	Single button operation (power, receiver reset and clear memory)
Display	LED display status indicators
Status Indicators	Power, battery life, satellites tracked, RTK transmission, available memory and occupation timer
Memory	Internal, removable Compact-Flash memory card (8MB card provided)
Integrated Antenna^d	Internal GPS antenna (L1/L2) with Pinwheel Technology, <1mm phase center offset and multipath rejection equivalent to choke ring antenna
Physical Characters Weight Size (max. d. x h.)	1.6 kg (3.5 lb) 23 cm x 15 cm (9 in x 5.9 in)
Environmental Operating Temperature Operating Temperature with batteries Storage Temperature Water Resistance Shock	-40° C to +55° C (-40° F to +131° F) -20° C to +55° C (-4° F to +131° F) -40° C to +85° C (-40° F to +185° F) RTCA/DO-160 Sec. 10 Cat. R, (equivalent to IPX4) 2m pole drop/1m stand alone
Power Requirements Power Input Logging Sleep Mode Batteries Operating Time	+9 to +18 Volts DC 4 W (typical) 0.25 W 4 x BDC46 batteries provided (1.3 Ah, 7.2 VDC, Li-ion) 4.5 hours for 2 internal batteries (no peripheral output)
External Ports	2 x R232, 1 x external power port,
Standard Input/ Output Formats	RTCA, RTCM, CMR, NMEA-0183 out, PPS out, Mark out

a. Accuracy depends on the number of satellites used, obstructions, satellite geometry (DOP), occupation time, multipath effects, atmospheric conditions, baseline length, survey procedures and data quality
 b. 1 sigma
 c. 95% confidence level
 d. GPS antenna calibration performed using US NGS
 Design and specifications are subject to change without notice

SOKKIA CO., LTD
 International Dept.
 Phone +81-42-729-1848
 Web www.sokkia.co.jp
 Email webmaster@sokkia.co.jp

SOKKIA CANADA
 Phone +1-905-238-5810
 Web www.sokkia.com

SOKKIA CORPORATION
 Phone +1-913-492-4900
 Web www.sokkia.com
 Email sales@sokkia.com

SOKKIA LATIN AMERICA
 Phone +1-305-599-4701
 Web www.sokkia.com
 Email sales@sokkia.com

