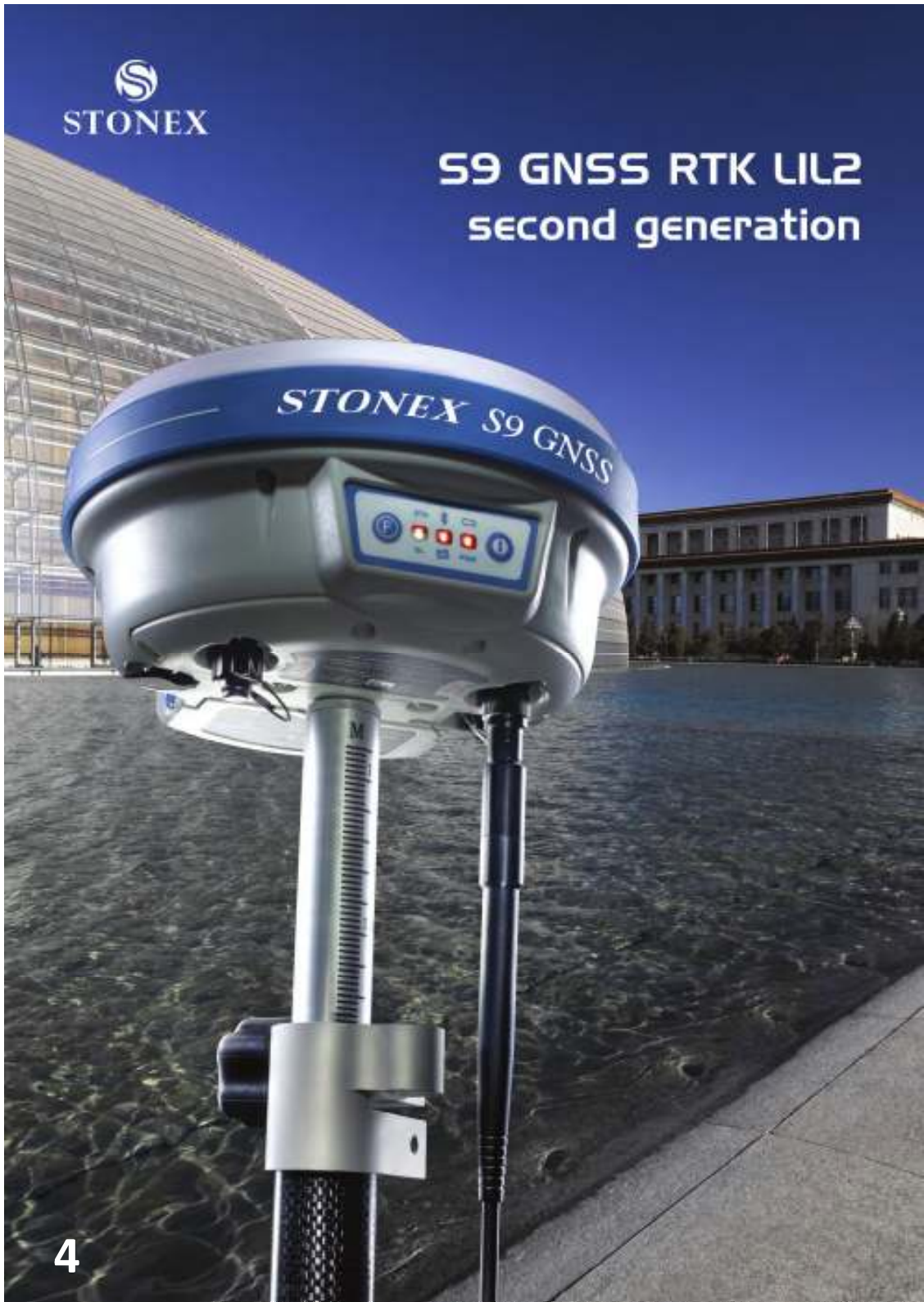




# S9 GNSS RTK LIL2 second generation



## S9 GNSS RTK LIL2 second generation

### Technical Data



Technical features	S9 GNSS RTK LIL2 second generation
<b>RTK device</b>	Trimble BD970
<b>Channels</b>	220
<b>Satellite tracked</b>	GPS: Simultaneous L1 C/A, L2E, L2C, L5 GLONASS: Simultaneous L1 C/A, L1 P/L2 C/A (GLONASS M Only), L2 P SBAS: Simultaneous L1 C/A, L5 Galileo: Simultaneous L1 E5C, E5A, E5B, E5A/B/C/D GIOVE-B: Simultaneous L1 C/A, E5A, E5B, E5A/B/C/D COMPASS (Beidou): B1 (GPS), B1-B2OC (B1, B1.1/B1.2), B2 (GPS), B2 (GPS), B2-4OC (B1, B1, B2 (GPS), B2OC (B1, B1.1, B1.2, B2 (GPS) Very low noise GNSS carrier phase measurements with < 1 mm precision in a 1 Hz bandwidth.
<b>Position rate</b>	up to 30 Hz
<b>Signal capture</b>	< 1 sec
• RTK signal initialization	typically < 10 sec
• Initial capture time	typically < 15 sec
<b>Internal memory</b>	4 GB
<b>Accuracy specifications</b>	
<b>Static horizontal accuracy</b>	2mm ± 1ppm (RMS)
<b>Static vertical accuracy</b>	5mm ± 1ppm (RMS)
<b>Fixed RTK horizontal accuracy</b>	1cm ± 1ppm (RMS)
<b>Fixed RTK vertical accuracy</b>	2cm ± 1ppm (RMS)
<b>Code differential positioning accuracy</b>	0.45m (CEP)
<b>Stand Alone RTK positioning accuracy</b>	1.5m (CEP)
<b>SBAS positioning accuracy</b>	typically < 5m (3D RMS)
<b>Connectivity</b>	
<b>Connectors (IO)</b>	9-pin serial port (baud rate up to 115,200bps) and 5-pin LEMO interface Multiple USB interfaces for connecting with PC Controller cable for supporting mobile phone GPS connections
<b>Bluetooth device</b>	2.4 GHz class II, maximum range is 50m
<b>Serial protocols</b>	Reference outputs: CMR, CMR+, RTCM 2.1, RTCM 2.3, RTCM 3.0, RTCM 3.1
	Navigation outputs: ASCII (NMEA-0183 CSV), AVL, RMC, HDOP, VDR, VHD, ROT, GGA, GSA, ZDA, VTG, DST, PVT, FTK, BPC, GLL, GRS, GPRMC, GPRSV
<b>Internal Radio</b>	HDG TRM 430 (Trimble protocol)
<b>Frequency range</b>	410-430 MHz or 430-450 MHz or 450-470 MHz
<b>Channel spacing</b>	6.25 kHz
<b>Exciting power</b>	0.5 W
<b>Maximum range</b>	about 2 km (urban environment)
<b>GNSS/GSM module</b>	Trimble HC13
<b>Band</b>	Quad-band GSM: 850/900/1800/1900 MHz GPS: Multiband class 12 GSM: release 9E EDGE (E-GPRS): Multiband class 10 class 4 (2 W) for GSM 900, class 4 (2 W) for GSM 1800, class 1 (1 W) for GSM 850, class 1 (1 W) for GSM 1900
<b>Output power</b>	
<b>Maximum range</b>	70km
<b>Power source</b>	
	Adopt 2500mAh high capacity Lithium battery, Voltage 7.2 V 5 to a 1.5V DC external power input with over-voltage
<b>Working time in static mode</b>	typically 4 hours
<b>Working time in RTK rover mode</b>	typically 4 hours
<b>Charge Time</b>	typically 7 hours
<b>Power consumption</b>	< 3.8 W
<b>Remaining time with battery light blinking</b>	1 hour
<b>Physical specifications</b>	
<b>Weight</b>	1.2 kg with internal battery, radio standard LEMO antenna
<b>Operational temperature</b>	-25°C to 60°C (-15°F to 140°F)
<b>Storage temperature</b>	-30°C to 60°C (-22°F to 140°F)
<b>Waterproof</b>	protected from temporary immersion to depth of 1 meter and flow 100% humidity
<b>Shock resistance</b>	designed to survive a 2m pole drop on concrete
<b>Vibration resistance, Outproof</b>	

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S9 GNSS RTK L1L2



## S9 GNSS RTK LIL2

### Technical Data



Technical features	S9 GNSS RTK LIL2
<b>RTK device</b>	Trimble BO970
<b>Channels</b>	220
<b>Satellite tracked</b>	GPS: Simultaneous L1 CA, L2E, L2C, L5 GLONASS: Simultaneous L1 CA, L1 E L2 CA (GLONASS M Only), L2 P SBAS: Simultaneous L1 CA, L5 GONE-A: Simultaneous L1 BOC, ESA, ESB, ESBBOC GONE-B: Simultaneous L1 GBOC, ESA, ESB, ESBBOC COMPASS (receives): B1 (QPSK), B1A (BOC), B1C, B1D (QPSK), B2 (QPSK), B2A (BOC), B2B (QPSK), B2C (QPSK), B2D (QPSK), B3 (QPSK), B3A (BOC), B3B (QPSK), B3C (QPSK), B3D (QPSK) Very low noise GNSS carrier phase measurement with 10 times precision in a 1 Hz bandwidth
<b>Position rate</b>	up to 30 Hz
<b>Signal reception</b>	< 1 sec
<b>• RTK signal initialization</b>	typically < 10 sec
<b>• Initial capture time</b>	typically < 10 sec
<b>Internal memory</b>	64 MB
<b>Accuracy specifications</b>	
<b>Static horizontal accuracy</b>	3mm ± 1ppm (RMS)
<b>Static vertical accuracy</b>	5mm ± 1ppm (RMS)
<b>Fixed RTK horizontal accuracy</b>	11mm ± 1ppm (RMS)
<b>Fixed RTK vertical accuracy</b>	20mm ± 1ppm (RMS)
<b>Code differential positioning accuracy</b>	0.45m (CEP)
<b>Stand Alone RTK positioning accuracy</b>	1.5m (CEP)
<b>SBAS positioning accuracy</b>	typically < 5m (3D RMS)
<b>Connectivity</b>	
<b>Connectors IO</b>	8-pin serial port (baud rate up to 115,200 bps) and 5-pin LDMO interface Multiple with USB interface for connecting with PC Controller cable for supporting mobile phone GPS connectors
<b>Bluetooth device</b>	2.4 GHz class II, maximum range is 50m
<b>Serial protocols</b>	Reference output: CMR, CMR+, RTCM 2.1, RTCM 2.3, RTCM 3.0, RTCM 3.1 Navigation output: ASCII (NMEA-0183 GSV), AVR, RMC, HDG, VGR, VHD, ROT, GGA, GSA, ZDA, VTG, GST, FJT, PK, BPO, GLL, GRS, OBS, GSCF
<b>Internal Radio</b>	only receiving
<b>Frequency range</b>	450-470 MHz
<b>Channel spacing</b>	6.25 kHz
<b>GPS/GSM module</b>	Siemens MGT5
<b>Band</b>	Quad-Band GSM 850/900/1800/1900 MHz GPS Multiband class 12 GSM release 99 EDGE (E-GRD) Multiband class 12
<b>Output power</b>	class 4 (2 W) for EGR990, class 4 (2 W) for EGR990, class 1 (1 W) for GSM1800, class 1 (1 W) for GSM1900
<b>Maximum range</b>	70km
<b>Power supply</b>	Accept 2500mAh high capacity Lithium battery, Voltage 7.2 V 9 to a 15V DC external power input with over-voltage
<b>Working time in static mode</b>	typically 6 hours
<b>Working time in RTK rover mode</b>	typically 4 hours
<b>Charge Time</b>	typically 7 hours
<b>Power consumption</b>	< 3.8 W
<b>Remaining time with battery light blinking</b>	1 hour
<b>Physical specifications</b>	
<b>Weight</b>	1.2 kg with internal battery, radio standard L1-F antenna
<b>Operational temperature</b>	-25°C to 40°C (-13°F to 104°F)
<b>Storage temperature</b>	-35°C to 60°C (-31°F to 148°F)
<b>Waterproof</b>	protected from temporary immersion to depth of 1 meter and from 100% humidity
<b>Shock resistance</b>	designed to survive a 2m pole drop on concrete
<b>Dustproof, Vibration resistance</b>	

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# ***STONEX® SurvCe***

**GPS RTK software**



#### • Easy to use

Tab-based MENU Structure. All commands are visible in each menu, preventing the need for Up-Down Arrow Keying to view options.

#### • Enhanced graphics

Collect points in the graphics mode. Points plot as they are shot in the field or entered. There is no need to switch between screens to view your points.

#### • Read in LandXML

Supports LandXML points, DTM, graphics, alignments, profiles and sections.

#### • New Look

Stonex® SurvCE has a new colorful look. Icons have been standardized to create continuity throughout the product, while modernizing the user experience.

#### • Hot List

The new Hot List lets users jump to the Stonex® SurvCE routines that previously had shortcuts without having to memorize key strokes. It also provides shortcut functionality to devices without keyboards.

#### • Volumes

Stonex® SurvCE can compute volumes between two surfaces, one surface and an elevation or simple stockpile volumes. Surfaces can be defined by graphical entities and points.

#### • Help

The software has optional on-board help files. These files are the entire user manual and can be installed separately. Click on the Stonex® SurvCE icon and select Help to get the help document that pertains to the current routine.

#### • Leveling

Stonex® SurvCE can be used to collect trigonometric level loops and digital level loops. Loops can be processed and adjusted on the device and all existing project coordinate points can be updated.

#### • GPS Networks

Stonex® SurvCE supports several GPS network protocols, such as NTRIP, TCP and UDP.

#### • Localization

The software supports an unlimited number of localization points. All project scale settings and coordinate system options have been centrally located in the localization dialog.

#### • Angle Sets in Store Points

Stonex® SurvCE allows users to "Configure" how each reading is measured with regard to direct and reverse options (Formerly known as SS/Trav). If direct and reverse readings are taken at the back sight, then any direct and reverse foresight will be considered an angle set and will be reduced accordingly. This eliminates the need to use a separate routine for angle sets.

#### • Station Equations

Stonex® SurvCE supports station equations.

#### • Job Settings

- Stonex® SurvCE has the option to use a template DBP file for new jobs so that all layers and colors are automatically created for your company standard.
- It has the option to auto-load cut sheets and control files from the previous job for those users that work on one site continuously.
- Stonex® SurvCE has the ability to turn off the auto-descriptions in stakeout and completely customize how all stakeout routines behave.
- Point Number by Interval. The software can interval the point ID by using the "Add to Next Pt ID" option. To number all points on the odd numbers, start at 1 and use 2 in this field.

#### • Feature Coding

- Stonex® SurvCE can collect parallel lines using the offset horizontal and offset vertical line drawing commands and close a rectangle by three points using the rectangle command. In the settings section of Special Codes, the user can even auto compute and store the additional points at the line vertices that were created by the software.
- Stonex® SurvCE allows the user to code in numerous coding styles that may be defined by their office package.

#### • Instrument Switching

Stonex® SurvCE keeps track of every instrument completely separate. This includes all base stations, rovers and total stations, so that mixing equipment is easy. Simply configure your gear once and forget it. The instrument icon has been enhanced to allow you to switch between your current equipment.

#### • Skew Angle Staking

Stonex® SurvCE supports staking offsets on a skew angle and provides the option to stake offset intersections and bisectors at angle points and the radius or PI point of an arc without leaving the Stake Line/Arc routine.



## Stonex S3 handheld GIS

### Technical specifications

#### System

Microsoft Windows Mobile 6.0 Professional  
CPU: 600 MHz  
128Mb RAM - 256 Mb Flash

#### Screen

Display 3.5" QVGA TFT sunlight LCD  
Touch screen

#### GPS

20 channels, L1, CIA  
SBAS (EGNOS)  
Sif binary and NMEA  
Stand-alone accuracy: < 2.5m (CEP, -130 dBm)<sup>1</sup>  
SBAS accuracy: 2.0m<sup>2</sup>

#### Data communication

Wireless LAN 802.11b/g  
Bluetooth v.2.0 EDR  
modem GSM/GPRS  
Micro SD card  
Mini USB 2.0

#### Power

Battery 3000 mAh Li-ion  
Working time 10h (typical)<sup>3</sup>  
Power consumption: 0.5W

#### Physical

Dimension 189mm\*100mm\*34mm  
Weight 250g (without battery)

#### Environmental

Operating temperature: da -10°C a +60°C  
Storage temperature: da -30°C a +70°C  
Drop: 1.5m on concrete  
Waterproof/dustproof: IEC 529 - IP66

#### Additional features

Camera 3 megapixel  
Gravity sensor  
Cellular GSM/GPRS modem



#### S3 standard accessories

- AC power supply with international adapter kit [AU] [US] [EU] [UK]
- USB cable
- Stylus (2 pack)
- Hand strap
- Wrist lanyard
- Rechargeable Li-ion battery (3000mAh)
- MicroSD memory card with adapter
- Vehicle AC power adapter
- External GPS antenna

#### Remark:

1. 90% 24 hr static, -130 dBm. The actual accuracy depends on the quality of GPS signal and working environment.
2. SBAS includes WAAS available in North America only, EGNOS available in Europe only, and MSAS available in Japan only.
3. Typical working status means that GPS works in fixed mode, display backlight is set to be best suitable for outdoor work. Key tone and keyboard backlight is off.