



STONEX S9 GNSS

Integrated
Surveying System



Stonex Surveying

- ▶ S9 GNSS
User Manual



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Chapter I : A brief introduction of S9

STONEX® devoted itself to offer to surveyors the most advanced GPS tools they need.

GPS RTK surveying technology plays an important role in surveying work and its use is getting more and more widespread. As a leading GPS RTK instrument produced, STONEX® guarantees the S9, its latest RTK GPS receiver, is suited for the requests of precision, reliability and user friendliness of nowadays.

S9 is able to receive both frequencies of GPS signal, but also satellite signals from GLONASS and GALILEO, so we must correctly speak of “GNSS” receiver.

S9 mainframe is integrated with GNSS antenna, GNSS module, Bluetooth device and battery. S9 is totally integrated: that means that the surveyor only needs the handheld to start its job.

The exquisite outlook and the amazing color bring you a fashioned surveying situation. The design has a higher stability, less power losing, smaller volume and lighter weight than the previous STONEX® receivers. S9 has a special design which makes it waterproof, dustproof and quakeproof. The batteries and built-in radio are set in the bottom of mainframe, giving more effective dustproof and waterproof qualities, and making S9 a better performer in field surveying. Wireless receiver unit weights 1.2 kg: the rover is light and easy to carry. The low power losing of receiver allows the single battery to meet a long time workability. Integrated design and anti-jamming property are combined perfectly: the former avoids the problem of a cumbersome external antenna, and the mainframe design can resolve the jamming problem effectively.

The performance of data-transfer radio technology is at the same level of international advanced technology: the bit error rate (*BER*) is 10^{-7} and the radio collision problem is reduced.

The S9 receiver mount a GPS/GLONASS antenna with a four feed technology. This design is able to reduce the electrical phase center error ellipsoid and in addition it improves the Right Hand Circular Polarization Characteristics (RHCP) of the antenna, resulting in enhanced GPS signal tracking and improved multipath rejection, in case a polarization reversal has taken place as a result of the signal reflection.

The embedded receiver firmware can customize different RTK software for different applications. The data transfer is easy and fast, like a Plug and Play USB drive. STONEX® provide S9 receivers with a two year complete international warranty. to the operational temperatures, limits which should not be exceeded for a correct functioning.

It is also important to point out that in each weather case after coming back from the field.

you should keep open the container in a warm and dry place and in the same time taking out the controller and receiver out from the container, in order to make them dry.

Anyway we recommend you to treat the instrument with reasonable care.

Even if you have used other GPS or GNSS products before, we recommend that you spend some time reading this manual to learn about the special features of this product. If you are not familiar with GNSS technology, we suggest to read a specific book in order to better understand the contents of this manual. Anyway you can ask for any technical support to our address support@stonexsurveying.com or contact your local dealer.

Chapter II : S9 mainframe

II.1 The outlook of mainframe

The mainframe has an almost cylindrical shape, with a base larger than the height. There are three parts: an upper cap, a rubber loop and the main structure. The upper cap protects the GNSS antenna placed inside. The rubber loop has the function of softening possible blows or falls. In the front side of the main structure there are keys and lights, on the bottom side there are one slot for the battery. All the others components of the receiver (Bluetooth device, main board, etc.) are contained inside the main structure.



Fig. 2.1 - S9 mainframe

II.2 Indicator lights and instrument setup

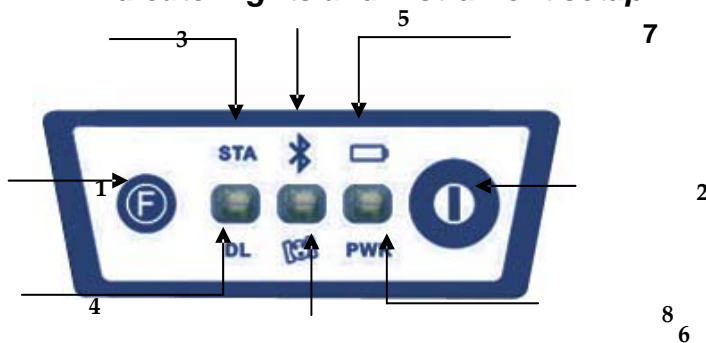


Fig. 2.2 - S9 keys and indicator lights

1. Function Key
2. Power Key
3. Status light
4. Data link light
5. Bluetooth light
6. Satellite light
7. Built-in power supply light
8. External power supply

As you see in figure 2.2 there are three indicator lights, each one with two different colors

Refer red to two different functions:

From the left to the right:

1st indicator: status indicator light (red), data link indicator light (green)

2nd indicator: Bluetooth indicator light (red), satellite indicator light (green)

3rd indicator: Battery power light (red), external power supply indicator light (green). The usages of them are as follows

BAT (red): Built-in power supply light (Fig.2.3).

It includes two kind of status

1. Fixed: electricity supply in good condition.
2. Flashing: lack of electricity.

Usually when the light begins to flash you have still one hour of power



Fig. 2.3 - S9 built-in power Light

PWR (green): external power supply light

(Fig.2.4). It includes two kinds of status.

1. Fixed: electricity supply in good condition.
2. Flashing: lack of electricity



Fig. 2.4 - S9 external power light

BT (red): Bluetooth indicator light (Fig. 2.5).

Once you have connected controller with receiver, this light will keep.



Fig. 2.5 - S9 Bluetooth light

SAT (green): Satellite light (Fig. 2.6).

It shows the amount of locked satellites, when the receiver gets satellites signal it will start to blink for a number of times equal to the amount of locked satellites.



Fig. 2.6 - S9 satellite light

STA (red): Status light (Fig. 2.7).

In static mode, its blinking means that the receiver is recording data. In base mode its blinking means that base is transmitting data. In rover mode and GPS data link, its blinking after connection shows that the data link module is working in good condition.



Fig. 2.7 - S9 status
light

DL (green): Data Link light (Fig. 2.8).

In static mode, it will keep lighted. In rover mode, its blinking shows that the is receiving corrections. In rover mode , its blinking after connection means that data link module working in good condition.



Fig. 2.8 - S9 Data Link light

Receiver Mode	Power LED (red)	Status LED (red)	Data Link LED (green)	Satellite LED (green)
Receiver ON Healty Power	ON	Not relevant	Not relevant	Not relevant
Receiver ON Low power	flashing	Not relevant	Not relevant	Not relevant
Logging of static data	ON	Flashing with frequency of data sampling	ON	Flashing for a number of times equal to the amount of locked

FCC WARNING

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions:

- (1) this device may not cause harmful interference, and
- (2) this device must accept any interference received, including interference that may cause undesired operation.

NOTE 1: Any changes or modifications not expressly approved by the manufacturer could void the user's authority to operate the equipment.

NOTE 2: The manufacturer is not responsible for any radio or TV interference caused by unauthorized modifications to this equipment. Such modifications could void the user's authority to operate the equipment.