EXCELLENT VALUE
SUSTAINABLE AND RELIABLE

PHEREFIX
www.spherefixgnss.com

PHEREFIX

PRODUCT BROCHURE
SPHEREFIX
GNSS Receiver Manufacturer

www.spherefixgnss.com
contact@spherefixgnss.com

Tel and WhatsApp:
+86-19928452984(Simon) +86-19022028323(Sunky)
Guangzhou Spherefix Navigation Technology Co., Ltd

ABOUT US

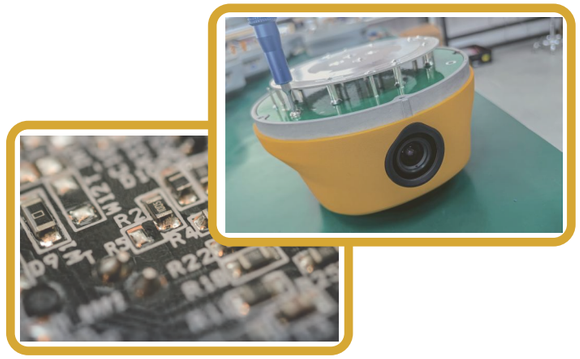
Company Introduction

SPHEREFIX is a brand of Guangzhou Spherefix Information Technology Co., Ltd. Adhering to the concept of “Smart Efficiency”, Spherefix is committed to providing engineering surveying equipments with affordable prices and high-precision positioning technology for the mass engineering users in emerging markets. Nowadays Spherefix products are sold to over 50 countries and regions around the world, with a series of products such as RTK receivers, CORS stations, GIS collectors, surveying controllers, engineering software, etc. At the same time, Spherefix can provide comprehensive service support for surveying and mapping practitioners, as well as offering an efficient and friendly measurement experience to users who have never been exposed to GNSS surveying equipments.

SPHEREFIX Strength

Technology for All

SPHEREFIX is committed to making professional GNSS surveying and mapping technology accessible to every surveyor. We have a comprehensive supply chain that allows everyone to experience high-quality GNSS products at the most affordable price. We strive to achieve one goal: customers receive value far beyond price.



Self-produced & Self-researched

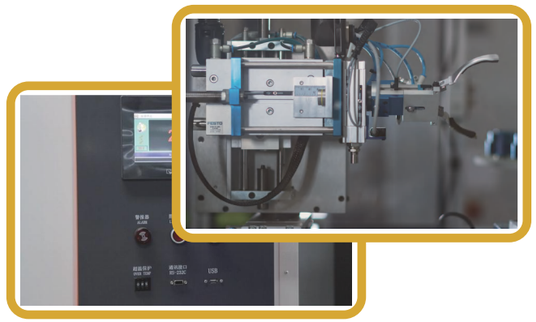
Self-produced & Self-researched are important components of SPHEREFIX's "technology for all" approach. We are committed to producing and researching personalized, branded high-quality products that cater to the rapid development of the market, allowing every surveyor to experience the fun brought by technology.

Quality Control

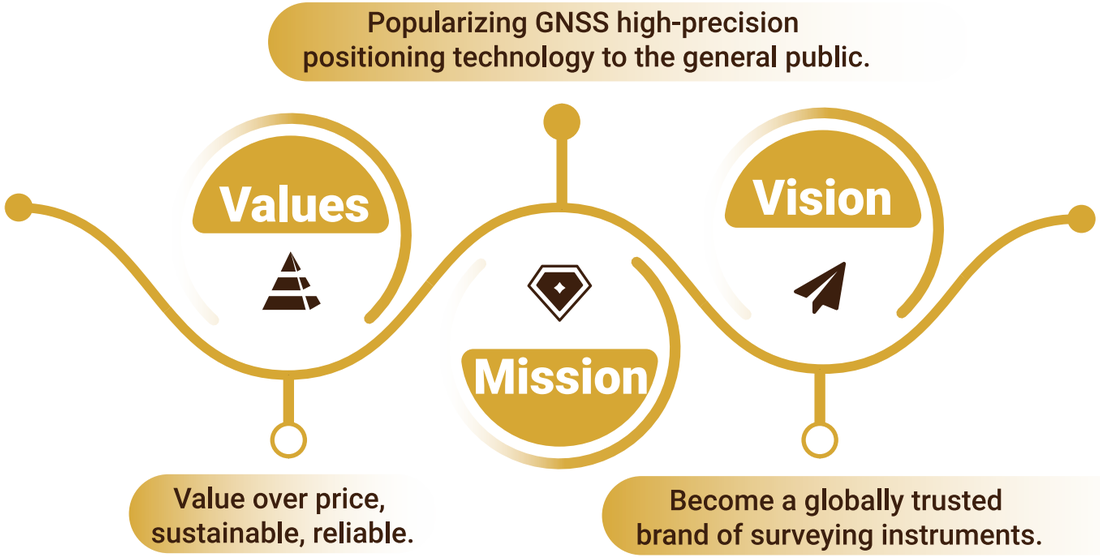
Quality is the survival foundation of SPHEREFIX. We implement strict control in every link, including production and supply chain. SPHEREEIX provides comprehensive after-sales service support and 24-month long-term warranty for all the products with a mission of gaining the trust of customers with the best quality.

R&D Laboratory

Through continuous exploration and investment, SPHEREFIX has completed the technical accumulation and precipitation of GNSS Receivers R&D. We established professional R&D laboratories, including Temperature, Electrostatic discharge, Electromagnetic compatibility laboratory, and ect. We are committed to developing the most professional surveying equipments for the exploration and challenges in the future.



Our Targets



CONTENT

Products

GNSS Receiver

Data Controller

Data Link

SP10 GNSS Receiver

SP10 is a portable RTK device introduced by Spherefix. With a lightweight body weighing less than 510g, it can be easily carried anywhere. Its 60-degree tilt measurement capability allows you to handle various complex environments. It supports 4G network connectivity. It also utilizes seamless inertial navigation technology, enabling measurement immediately.

CHARACTERISTIC

- Qualcomm Cortex-A7
- Linux intelligent system

- BDS ,GPS , GLONASS, GALILEO, QZSS
- Network, Bluetooth, WiFi

- Centimeter level positioning
- IMU60°, positioning accuracy of less than 2cm

- High-capacity lithium battery
- More than 16 hours

- Solid magnesium alloy shell
- In line with IP65 design requirements, safe and reliable

IMU

SP10 is possible to measure points with an inclination of the pole up to 60° even in harsh environments and in the presence of magnetic fields.

Smart Size

SP10 is an intelligent, high precision data acquisition receiver that offers greater freedom of movement and flexibility.

4G Modem

Featuring the GSM 4G modem, for a fully integrated communications choice, combined with a light and modern design.

Calibrating when Startup

With seamless inertial navigation, there's no need for calibration, which makes you ready to measure upon startup.

ITEM		SPECIFICATION	REMARKS
HARDWARE SYSTEM OS		Qualcomm Cortex-A7 Linux	
GNSS	GPS	L1C/A, L2P, L5	
	GLONASS	L1, L2	
	BDS	B1I, B2I, B3I, B1C, B2a	
	GALILEO	E1, E5a, E5b	
	QZSS	L1, L2, L5	
	Channel	1408	
	Data format	NMEA-0183	
	Correction I / O Protocol	RTCM3.X	
	Data update frequency	5Hz(max)	
	Recapture Time	<1s	
	Cold Boot	<40s	
POSITIONING ACCURACY	Single(RMS)	Horizontal: 1.5m; Vertical: 2.5m	
	DGPS(RMS)	Horizontal: 0.4m; Vertical: 0.8m	
	RTK(RMS)	Horizontal: ±(8mm+1ppm); Vertical: ±(15mm+1ppm)	
	Time Accuracy(RMS)	10ns	
	Static Accuracy(RMS)	Horizontal: ±(2.5mm+0.5ppm); Vertical: ±(5mm+0.5ppm)	
	Speed Accuracy(RMS)	0.2m/s	
	Tilt compensation Accuracy(within 60°)	<2cm	
SYSTEM	Bluetooth	BR+EDR+BLE	
	WIFI	802.11 b/g/n	
	Network	LTE FDD: B1/2/3/5/8 LTE TDD: B38/39/40/41 GSM: 900/1800MHz	
	Storage	32GB	
INDICATOR	Power Indicator	Show power status	
	Satellite Indicator	Show position status	
	Data link Indicator	Show differential signal status	
	Bluetooth Indicator	Show Bluetooth status	
BATTERY	Battery	3.7V, 9600mAh	
	Work time	More than 16 hours(Typical, Rover, GSM)	The static working mode supports continuous data collection for 24 hours under full power.
	Charge	MTK PE+1.1/2.0 9V/2A	Support fast charging adapter and adaptively and dynamically adjust charging current.
		USB PD 12V/1.25A	
		5V/3A	
ENVIRONMENT	Working Temperature	-20°C~+60°C	
	Storage Temperature	-40°C~+85°C	
	Shock	Withstand 1.5M pole drop	
	Protection	IP65	
PHYSICAL	Material	Magenesium alloy main body+ ABS/PC top cover	
	Dimension(mm)	100.5*100.5*69	
	Weight(g)	510	

▲ *Manufacturers may update parameters at any time, please refer to the latest product information.*

SP20 GNSS Receiver

SP20 is a portable multifunctional GNSS receiver, a new generation of measurement engine, supporting tilt measurement, NFC, built-in 4G modem, Bluetooth, WiFi and Radio. It adopts a new appearance design, magnesium alloy structure and Linux operating system. It is an extremely light-weight, fully functional and portable geodesic GNSS receiver.

CHARACTERISTIC

- ARM Cortex-A7 1.8GHz
- Linux intelligent system

- BDS ,GPS , GLONASS, GALILEO, QZSS, SBAS, NavIC
- 4G, Radio, Bluetooth, WiFi

- Centimeter level positioning
- IMU60°, positioning accuracy of less than 2cm

- High-capacity lithium battery
- Ultra long battery endurance

- Solid magnesium alloy shell
- In line with IP68 design requirements, safe and reliable

IMU

SP20 has the IMU technology. Fast initialization, and up to 60° inclination.

Multi constellation

With its1408 channels, SP20 provides an excellent on board real time navigation solution with high accuracy. All GNSS signals (GPS, GLONASS, BDS, GALILEO, QZSS, SBAS, IRNSS) are included.

4G Modem

SP20 has an internal 4G modem that operates with more cellular network signals. A fast internet connection is guaranteed.

Combined antenna

With seamless inertial navigation, there's no need for calibration, which makes you ready to measure upon startup.

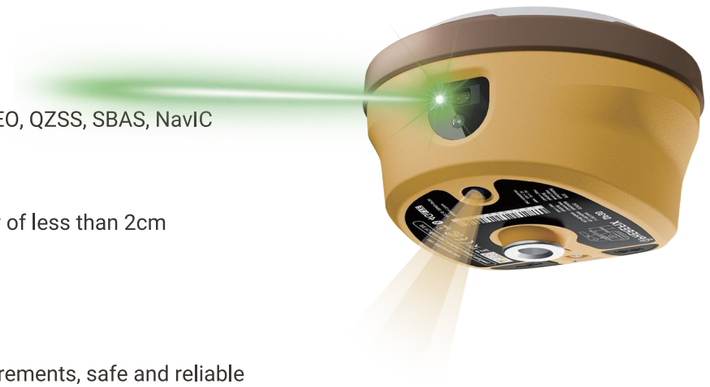
ITEM		SPECIFICATION	REMARKS
HARDWARE SYSTEM OS		ARM Cortex-A7 Linux	
GNSS	GPS	L1C/A, L1C, L2P(Y), L2C, L5	Support PPP-B2b Support PPP-E6 Support SBAS
	GLONASS	L1, L2, L3	
	BDS	B1I, B2I, B3I, B1C, B2a, B2b	
	GALILEO	E1, E5a, E5b, E6	
	QZSS	L1, L2, L5	
	SBAS	L1	
	NavIC(IRNSS)*	L5*	Requires latest firmware support
	Channel	1408 channels	
	Data format	NMEA-0183	
	Correction I / O Protocol	RTCM3.X	
	Data update frequency	5Hz(Typ) 20Hz(max)	
	Recapture Time	<1s	
	Cold Boot	<30s	
POSITIONING ACCURACY	Single(RMS)	Horizontal: 1.5m; Vertical: 2.5m	
	DGPS(RMS)	Horizontal: 0.4m; Vertical: 0.8m	
	RTK(RMS)	Horizontal: ±(8mm+1ppm); Vertical: ±(15mm+1ppm)	
	Time Accuracy(RMS)	20ns	
	Static Accuracy(RMS)	Horizontal: ±(2.5mm+0.5ppm); Vertical: ±(5mm+0.5ppm)	
	Speed Accuracy(RMS)	0.03m/s	
	Tilt compensation Accuracy (within 60°)	<2cm	
SYSTEM	Bluetooth	BR+EDR+BLE	
	WIFI	802.11 b/g/n	
	Network	LTE FDD: B1/2/3/4/5/7/8/12/13/18/19/20/25/26/28 LTE TDD: B38/39/40/41 WCDMA: B1/2/4/5/6/8/19 GSM: B2/3/5/8	
	Data Radio	Frequency: 410~470MHz Power: 0.5W/1.5W Air baud rate: 9600, 19200bps Protocol: TRIMTALK, TRIMMK3, SOUTH, TRANSEOT	
	Storage	32GB	
INDICATOR	Power Indicator	Show power status	
	Satellite Indicator	Show position status	
	Data link Indicator	Show differential signal status	
BATTERY	Battery	3.7V, 9600mAh	
	Battery Endurance	More than 16 hours (Typical, Rover, GSM)	The static working mode supports continuous data collection for 24 hours under full power.
	Charge	MTK PE + 1.1/2.0 9V/2A USB PD 12V/1.25A 5V/3A	Support fast charging adapter and adaptively and dynamically adjust charging current.
ENVIRONMENT	Working Temperature	-20°C~+60°C	
	Storage Temperature	-40°C~+85°C	
	Anti-vibration	Resistant to 1.5m drop with pole at room temperature	
	Protection	IP68	
PHYSICAL	Material	Magnesium alloy main body, ABS/PC top cover	
	Dimension(mm)	Φ147.9mm*68mm	
	Weight(g)	740g	

▲ *Manufacturers may update parameters at any time, please refer to the latest product information.*

SP30 GNSS Receiver

SP30 is a multifunctional GNSS receiver integrating AR and laser modules. It features a built-in high-precision positioning module that supports satellite signal tracking across all frequencies. It is equipped with 4G full network access, Bluetooth, Wi-Fi, and a 5W LoRa radio. Its built-in high-precision inertial navigation module, AR real-scene staking module, and camera-assisted laser measurement module provide a premium "what you see is what you measure" measurement experience.

CHARACTERISTIC



- ARM Cortex-A7
- Linux intelligent system

- BDS ,GPS , GLONASS, GALILEO, QZSS, SBAS, NavIC
- 4G, Radio, Bluetooth, WiFi

- Centimeter level positioning
- IMU60°, positioning accuracy of less than 2cm

- High-capacity lithium battery
- Ultra long battery endurance

- Solid magnesium alloy shell
- In line with IP68 design requirements, safe and reliable

- Support AR high-definition real scene stakeout
- Support Laser surveying

Receive All Satellite Signals

SP30 integrates high-precision positioning module, configures 1408 high-speed channels, supports BDS B1I, B2I, B3I, B1C, B2a, B2b(PPP-B2b), GPS L1C/A, L1C, L2C, L5, GLONASS L1, L2, L3, Galileo E1, E5a, E5b, E6(PPP-E6), QZSS L1, L2, L5, SBAS and NavIC(IRNSS).

AR Real-scene Stakeout

Professional ultra-wide-angle camera, providing high-definition real-scene staking function, and more convenient real-scene stakeout application, makes your stakeout easier and more intuitive.

Camera-assisted Laser surveying

SP30 is equipped with a high-precision millimeter-level laser ranging module equipped with photography assistance, combined with the high-precision inertial navigation, to achieve measurement anywhere and better cope with various complex environments.

Ultra-long Endurance

The built-in large-capacity battery enables it to operate continuously for more than 24 hours in the Rover mode.

ITEM		SPECIFICATION	REMARKS
HARDWARE SYSTEM		ARM Cortex-A7	
OS		Linux	
GNSS	GPS	L1C/A, L1C, L2P(Y), L2C, L5	Support PPP-B2b Support PPP-E6 Support SBAS
	GLONASS	L1, L2, L3	
	BDS	B1I, B2I, B3I, B1C, B2a, B2b	
	GALILEO	E1, E5a, E5b, E6	
	QZSS	L1, L2, L5	
	SBAS	L1	
	NavIC(IRNSS)*	L5*	Requires latest firmware support
	Channel	1408 channels	
	Data format	NMEA-0183	
	Correction I / O Protocol	RTCM3.X	
	Data update frequency	20Hz	
	Recapture Time	<1s	
	Cold Boot	<40s	
POSITIONING ACCURACY	Single(RMS)	Horizontal: 1.5m; Vertical: 2.5m	
	DGPS(RMS)	Horizontal: 0.4m; Vertical: 0.8m	
	RTK(RMS)	Horizontal: ±(8mm+1ppm); Vertical: ±(15mm+1ppm)	
	Time Accuracy(RMS)	20ns	
	Static Accuracy(RMS)	Horizontal: ±(2.5mm+0.5ppm); Vertical: ±(5mm+0.5ppm)	
	Speed Accuracy(RMS)	0.03m/s	
	Tilt compensation Accuracy (within 60°)	<2cm	
	Laser Surveying	The three-dimensional error of laser tilt surveying within 5m distance is≤2.5cm	TBD
SYSTEM	Bluetooth	BR+EDR+BLE	
	WIFI	802.11 b/g/n	
	Network	LTE FDD: B1/2/3/4/5/7/8/18/19/20/25/26/28	
		LTE TDD: B38/39/40/41 WCDMA: B1/2/4/5/6/8/19	
		GSM: B2/3/5/8	
	Data Radio	Transceiver station Frequency: 410~470MHz	
		Power: 1W/2W/5W Air baud rate: 9600, 19200bps	
		Protocol: TRIMTALK, TRIMMK3, SOUTH,TRANSEOT	
	Storage	32GB	
	AR Camera	Support AR real scene stakeout	
		Sensor Size: 1/2.8 inch	
		Aperture: f/2.5	
		Pixel: 1920*1080px	
		Angle of view: 69.3°±3°	
		Distortion: <0.38%	
	Laser Aiming Camera	Sensor Size: 1/2.8 inch	
		Aperture: f/2.5	
		Pixel: 1920*1080px	
		Angle of view: 69.3°±3°	
		Distortion: <0.38%	
INDICATOR	Power Indicator	Show power status	
	Satellite Indicator	Show position status	
	Bluetooth Indicator	Lights up when Bluetooth is connected	
	Data link Indicator	Show differential signal status	
BATTERY	Battery	7.4V, 10000mAh	TBD
	Battery Endurance	More than 24 hours(In Phone network data link mode)	TBD
		Support USB PD 12v/2A, USB DCP 5V/3A	
	Charge	Support external power supply 9~24VDC	
ENVIRONMENT	Working Temperature	-20°C~+60°C	
	Storage Temperature	-20°C~+70°C	
	Shock	Resistant to 1.5m drop with pole at room temperature	
	Protection	IP68	
PHYSICAL	Material	Magenesium alloy main body +ABS/PC plastic top cover	
	Dimension(mm)	Φ145.7*93.6	
	Weight(g)	1000	TBD

▲ *Manufacturers may update parameters at any time, please refer to the latest product information.*

SP30Pro GNSS Receiver

SP30Pro is a multi-functional GNSS receiver that integrates AR and Image Surveying (IS) modules. It has a built-in high-precision positioning module, which supports the tracking of satellite signals at all frequency points. The device is completely equipped with 4G Full-netcom, Bluetooth, WIFI, and a built-in 5W data transmission radio. Its high-precision inertial navigation module integrates IS and AR real scene stakeout, greatly expanding the boundaries of surveying & mapping.

CHARACTERISTIC

- ARM Cortex-A7
- Linux intelligent system
- BDS ,GPS , GLONASS, GALILEO, QZSS, SBAS, NavIC
- 4G, Radio, Bluetooth, WiFi
- Centimeter level positioning
- IMU60°, positioning accuracy of less than 2cm
- High-capacity lithium battery
- Ultra long battery endurance
- Solid magnesium alloy shell
- In line with IP68 design requirements, safe and reliable
- Support AR high-definition real scene stakeout
- Support high-definition image surveying

Receive All Satellite Signals

SP30Pro integrates high-precision positioning module, configures 1408 high-speed channels, supports BDS B1I, B2I, B3I, B1C, B2a, B2b(PPP-B2b), GPS L1C/A, L1C, L2C, L5, GLONASS L1, L2, L3, Galileo E1, E5a, E5b, E6(PPP-E6), QZSS L1, L2, L5, SBAS and NavIC(IRNSS).

AR Real-scene Stakeout

Professional ultra-wide-angle camera, providing high-definition real-scene staking function, and more convenient real-scene stakeout application, makes your stakeout easier and more intuitive.

Image Surveying

SP30Pro is equipped with a 1/2.6-inch high-definition wide-angle camera, integrated with high-precision inertial navigation algorithms, and combined with a high-performance Android controller to achieve high-precision image surveying.

Ultra-long Endurance

The built-in large-capacity battery enables it to operate continuously for more than 24 hours in the Rover mode.

ITEM		SPECIFICATION	REMARKS
HARDWARE SYSTEM		ARM Cortex-A7	
OS		Linux	
GNSS	GPS	L1C/A, L1C, L2P(Y), L2C, L5	
	GLONASS	L1, L2, L3	
	BDS	B1I, B2I, B3I, B1C, B2a, B2b	Support PPP-B2b
	GALILEO	E1, E5a, E5b, E6	Support PPP-E6
	QZSS	L1, L2, L5	Support SBAS
	SBAS	L1	
	NavIC(IRNSS)*	L5*	Requires latest firmware support
	Channel	1408 channels	
	Data format	NMEA-0183	
	Correction I / O Protocol	RTCM3.X	
	Data update frequency	20Hz	
	Recapture Time	<1s	
	Cold Boot	<40s	
POSITIONING ACCURACY	Single(RMS)	Horizontal: 1.5m; Vertical: 2.5m	
	DGPS(RMS)	Horizontal: 0.4m; Vertical: 0.8m	
	RTK(RMS)	Horizontal: ±(8mm+1ppm); Vertical: ±(15mm+1ppm)	
	Time Accuracy(RMS)	20ns	
	Static Accuracy(RMS)	Horizontal: ±(2.5mm+0.5ppm); Vertical: ±(5mm+0.5ppm)	
	Speed Accuracy(RMS)	0.03m/s	
	Tilt compensation Accuracy (within 60°)	<2cm	
SYSTEM	Bluetooth	BR+EDR+BLE	
	WIFI	802.11 b/g/n	
	Network	LTE FDD: B1/2/3/4/5/7/8/18/19/20/25/26/28	
		LTE TDD: B38/39/40/41 WCDMA: B1/2/4/5/6/8/19	
		GSM: B2/3/5/8	
	Data Radio	Transceiver station Frequency: 410~470MHz	
		Power: 1W/2W/5W Air baud rate: 9600, 19200bps	
		Protocol: TRIMTALK, TRIMMK3, SOUTH,TRANSEOT	
	Storage	32GB, User Storage Space 24GB	
	AR Camera	Support AR real scene stakeout	
		Sensor Size: 1/2.8 inch	
		Aperture: f/2.5	
		Pixel: 1920*1080	
		Angle of view: 69.3°±3°	
		Distortion: <0.38%	
	IS Camera	Support Image Surveying	
		Sensor Size: 1/2.6 inch	
		Focal Distance: 6mm	
		Aperture: f/2.8	
		Pixel: 1920*1080	
		Angle of view: 83*72*51	
		Distortion: <0.5%	
INDICATOR	Power Indicator	Show power status	
	Satellite Indicator	Show position status	
	Bluetooth Indicator	Lights up when Bluetooth is connected	
	Data link Indicator	Show differential signal status	
BATTERY	Battery	7.4V, 10000mAh	TBD
	Battery Endurance	More than 24 hours(In Phone network data link mode)	TBD
	Charge	Support USB PD 12v/2A, USB DCP 5V/3A Support external power supply 9~24VDC	
ENVIRONMENT	Working Temperature	-20°C~+60°C	
	Storage Temperature	-20°C~+70°C	
	Shock	Resistant to 1.5m drop with pole at room temperature	
	Protection	IP68	
PHYSICAL	Material	Magenesium alloy main body +ABS/PC plastic top cover	
	Dimension(mm)	Φ145.7*93.6	
	Weight(g)	1000	TBD

▲ *Manufacturers may update parameters at any time, please refer to the latest product information.*

SP30Se GNSS Receiver

SP30Se is a multifunctional GNSS receiver with Linux operating system that supports receiving all satellite signals. The new generation measurement engine supports tilt surveying and has built-in 4G full network communication, Bluetooth, WIFI and 5W digital transmission radio. The transmission distance in open areas can reach 16km. Combined with a lightweight and portable design, it makes your surveying and mapping work more intelligent and efficient.

CHARACTERISTIC

- ARM Cortex-A7
- Linux intelligent system

- BDS ,GPS , GLONASS, GALILEO, QZSS, SBAS, NavIC
- 4G, Radio, Bluetooth, WiFi

- Centimeter level positioning
- IMU60°, positioning accuracy of less than 2cm

- High-capacity lithium battery
- Ultra long battery endurance

- Solid magnesium alloy shell
- In line with IP68 design requirements, safe and reliable

Receive All Satellite Signals

SP30Se integrates high-precision positioning module, configures 1408 high-speed channels, supports BDS B1I, B2I, B3I, B1C, B2a, B2b(PPP-B2b), GPS L1C/A, L1C, L2C, L5, GLONASS L1, L2, L3, Galileo E1, E5a, E5b, E6(PPP-E6), QZSS L1, L2, L5, SBAS and NavIC(IRNSS).

5W Built-in Radio

When SP30Se is used as a base station, transmitting at 5W high power in open areas, with a distance of up to 16KM.

4G Full-netcom

Combining a lightweight and modern design, SP30Se is equipped with a 4G modem, providing fully integrated communication options.

Ultra-long Endurance

The built-in large-capacity battery enables it to operate continuously for more than 10 hours in the Base mode.

ITEM		SPECIFICATION	REMARKS
HARDWARE SYSTEM		ARM Cortex-A7	
OS		Linux	
GNSS	GPS	L1C/A, L1C, L2P(Y), L2C, L5	
	GLONASS	L1, L2, L3	
	BDS	B1I, B2I, B3I, B1C, B2a, B2b	Support PPP-B2b
	GALILEO	E1, E5a, E5b, E6	Support PPP-E6
	QZSS	L1, L2, L5	Support SBAS
	SBAS	L1	
	NavIC(IRNSS)*	L5*	Requires latest firmware support
	Channel	1408 channels	
	Data format	NMEA-0183	
	Correction I / O Protocol	RTCM3.X	
	Data update frequency	20Hz	
	Recapture Time	<1s	
	Cold Boot	<40s	
POSITIONING ACCURACY	Single(RMS)	Horizontal: 1.5m; Vertical: 2.5m	
	DGPS(RMS)	Horizontal: 0.4m; Vertical: 0.8m	
	RTK(RMS)	Horizontal: ±(8mm+1ppm); Vertical: ±(15mm+1ppm)	
	Time Accuracy(RMS)	20ns	
	Static Accuracy(RMS)	Horizontal: ±(2.5mm+0.5ppm); Vertical: ±(5mm+0.5ppm)	
	Speed Accuracy(RMS)	0.03m/s	
	Tilt compensation Accuracy (within 60°)	<2cm	
SYSTEM	Bluetooth	BR+EDR+BLE	
	WIFI	802.11 b/g/n	
	Network	LTE FDD: B1/2/3/4/5/7/8/18/19/20/25/26/28	
		LTE TDD: B38/39/40/41 WCDMA: B1/2/4/5/6/8/19	
		GSM: B2/3/5/8	
	Data Radio	Transceiver station Frequency: 410~470MHz	
		Power: 1W/2W/5W Air baud rate: 9600, 19200bps	
		Protocol: TRIMTALK, TRIMMK3, SOUTH,TRANSEOT	
	Storage	32GB	
INDICATOR	Power Indicator	Show power status	
	Satellite Indicator	Show position status	
	Bluetooth Indicator	Lights up when Bluetooth is connected	
	Data link Indicator	Show differential signal status	
BATTERY	Battery	7.4V, 10000mAh	TBD
	Battery Endurance	≥10 hours(as Base), ≥24 hours(as Rover)	TBD
		Support USB PD 12v/2A, USB DCP 5V/3A	
	Charge	Support external power supply 9~24VDC	
ENVIRONMENT	Working Temperature	-20°C~+60°C	
	Storage Temperature	-20°C~+70°C	
	Shock	Resistant to 1.5m drop with pole at room temperature	
	Protection	IP68	
PHYSICAL	Material	Magenesium alloy main body +ABS/PC plastic top cover	
	Dimension(mm)	Φ145.7*93.6	
	Weight(g)	1000	TBD

▲ *Manufacturers may update parameters at any time, please refer to the latest product information.*

S66UGH-Lite GNSS Receiver

S66UGH-Lite is a miniaturized, and multi-functional GNSS receiver designed for the construction of the Beidou ground-based enhancement system. It has a built-in 1408-channel full-system full-frequency point positioning module, Linux operating system, rich interface types, various communication methods, and supports large capacity data storage. It is the best choice for the construction of the Beidou ground-based enhancement system.

CHARACTERISTIC

- ARM Cortex-A7
- Linux intelligent system

- 1408 channels
- BDS ,GPS , GLONASS, GALILEO, QZSS, SBAS

- Enhanced multi-mode multi-frequency RTK technology
- Support secondary development

- Support Front-end solution
- Support Cloud service function

- Solid magnesium alloy shell
- In line with IP68 design requirements, safe and reliable

- Built-in 32G storage
- Downloaded remotely, supports multi-channel circular storage

Receive All Satellite Signals

S66UGH-Lite has 1408 channels, integrates a high-precision positioning module, and supports the reception and interpretation of GNSS signals (BDS, GPS, GLONASS, GALILEO, QZSS and SBAS).

Rich Interfaces and Various Communication Methods

S66UGH-Lite provides a single antenna, Ethernet, serial port and mobile network interfaces for customers to choose.

Cloud service Function

S66UGH-Lite can regularly report the device status such as device location, network status, signal strength, satellite reception status, etc., and support cloud platform to restart, reset, and upgrade the remote device.

IP68

Industrial design, solid magnesium alloy shell, in line with IP68 design requirements, safe and reliable.

ITEM		SPECIFICATION	REMARKS
HARDWARE SYSTEM		ARM Cortex-A7	
OS		Linux	
GNSS	GPS	L1C/A, L1C, L2P(Y), L2C, L5	Support PPP-B2b Support PPP-E6 Support SBAS
	GLONASS	L1, L2, L3	
	BDS	B1I, B2I, B3I, B1C, B2a, B2b	
	GALILEO	E1, E5a, E5b, E6	
	QZSS	L1, L2, L5	
	SBAS	L1	
	NavIC(IRNSS)*	L5*	Requires latest firmware support
	Channel	1408 channels	
	Differential Observation Accuracy(RMS)	10.0cm	
	Kinematic Phase Observation Accuracy(RMS)	1.0cm	
	Data format	RINEX, Custom	
	Position Data	NMEA-0183	
	Differential Data	RTCM3.X	
	Data update frequency	1Hz, 2Hz, 5Hz, 10Hz, 20Hz	
	Receive Data Availability	≥98%(Data available/Data collected)	
	Data Integrity	≥98%(Data collected/Data should be collected)	
	Single(RMS)	Horizontal: 1.5m; Vertical: 2.5m	
	RTK(RMS)	Horizontal: ±(8mm+1ppm)	
		Vertical: ±(15mm+1ppm)	
	Static Accuracy(RMS)	Horizontal: ±(2.5mm+0.5ppm)	
		Vertical: ±(5mm+0.5ppm)	
	Time Accuracy(RMS)	20ns	
SYSTEM	Serial Port	Standard RS232 interface, Baud rate supports 1200, 2400, 4800, 9600, 19200, 38400, 115200, 230400bps	
	Network Port	Standard RJ45 interface 10/100Mbps network adaptive	
	USB	Integrated on the 7-pin interface, support access to the computer to copy data directly	
	Network Communication (Full Netcom) Interface	LTE FDD: B1/2/3/4/5/7/8/12/13/18/19/20/25/26/28	
		LTE TDD: B38/39/40/41	
		WCDMA: B1/2/4/5/6/8/19	
		GSM: B2/3/5/8	
	Interface	PWE*1: Power supply port DATA*1 PPS*1	
		SIM*1: Standard SIM card Ethernet*1	
		GNSS*1: Main antenna 4G*1: 4G antenna port	
	Storage	32GB, circular storage support multi-channel storage	
ENVIRONMENT	Working Temperature	-40°C~+85°C	
	Storage Temperature	-40°C~+85°C	
	Protection	IP68	
PHYSICAL	Material	Magenesium alloy main body	
	Dimension(mm)	135*102*47	
	Weight(g)	470	

▲ *Manufacturers may update parameters at any time, please refer to the latest product information.*

S66UFH-Lite GNSS Receiver

S66UFH-Lite is a miniaturized GNSS receiver based on the Beidou ground-based augmentation system and is completely independently developed. It is equipped with a built-in Linux operating system, with a variety of interface types, diverse communication methods, supporting large capacity data storage. It supports dual-antenna directional solution and dual-antenna independent differential output function at full-system and full-frequency points. It is widely used in the fields such as automatic driving, mechanical control, and motion posture measurement.

CHARACTERISTIC

- ARM Cortex-A7
- Linux intelligent system

- 1408 channels
- BDS ,GPS , GLONASS, GALILEO, QZSS

- Enhanced multi-mode multi-frequency RTK technology
- Support secondary development

- Support Front-end solution
- Support Cloud service function

- Solid magnesium alloy shell
- In line with IP68 design requirements, safe and reliable

- Built-in 32G storage
- Downloaded remotely, supports multi-channel circular storage

Receive All Satellite Signals

S66UFH-Lite has 1408 channels, integrates a high-precision positioning module, and supports the reception and interpretation of GNSS signals (BDS, GPS, GLONASS, GALILEO, QZSS and SBAS).

Rich Interfaces and Various Communication Methods

S66UFH-Lite provides dual antennas, Ethernet, serial port and mobile network interfaces for customers to choose.

Support Front-end Solution

S66UFH-Lite supports the front-end calculation function, which can complete the static data calculation inside the device and upload the results to the cloud, which greatly reduces the requirements on the computing power of the cloud server.

IP68

Industrial design, solid magnesium alloy shell, in line with IP68 design requirements, safe and reliable.

ITEM		SPECIFICATION	REMARKS
HARDWARE SYSTEM		ARM Cortex-A7	
OS		Linux	
GNSS	GPS	L1C/A, L2P/L2C, L5	Marked with *, it means firmware support is required. Support PPP-B2b Support PPP-E6 Support SBAS
	GLONASS	L1, L2,	
	BDS	B1I, B2I, B3I, B1C*, B2b*	
	GALILEO	E1, E5a, E5b, E6*	
	QZSS	L1, L2, L5	
	SBAS	L1C/A	
	Channel	1408 channels	
	Differential Observation Accuracy(RMS)	10.0cm	
	Kinematic Phase Observation Accuracy(RMS)	1.0cm	
	Data format	RINEX, Custom	
	Position Data	NMEA-0183	
	Differential Data	RTCM3.X	
	Data update frequency	1Hz, 2Hz, 5Hz, 10Hz, 20Hz	
	Receive Data Availability	≥98%(Data available/Data collected)	
	Data Integrity	≥98%(Data collected/Data should be collected)	
	Single(RMS)	Horizontal: 1.5m; Vertical: 2.5m	
	RTK(RMS)	Horizontal: ±(8mm+1ppm) Vertical: ±(15mm+1ppm)	
	Static Accuracy(RMS)	Horizontal: ±(2.5mm+0.5ppm) Vertical: ±(5mm+0.5ppm)	
	Time Accuracy(RMS)	20ns	
	Heading Accuracy(RMS)	0.2°/m	
SYSTEM	Serial Port	Standard RS232 interface, Baud rate supports 1200, 2400, 4800, 9600, 19200, 38400, 115200, 230400bps	
	Network Port	Standard RJ45 interface 10/100Mbps network adaptive	
	USB	Integrated on the 7-pin interface, support access to the computer to copy data directly	
	Network Communication (Full Netcom) Interface	LTE FDD: B1/2/3/4/5/7/8/12/13/18/19/20/25/26/28	
		LTE TDD: B38/39/40/41	
		WCDMA: B1/2/4/5/6/8/19	
		GSM: B2/3/5/8	
	Interface	PWE*1: Power supply port DATA*1	
		SIM*1: Standard SIM card Ethernet*1	
		GNSS*2: TNC interface 4G*1: 4G antenna port	
	Storage	32GB, circular storage support multi-channel storage	
ELECTRICAL CHARACTERISTIC	Voltage Input	9-24V DC (12V typical)	
	Power dissipation	2W(typical)	
ENVIRONMENT	Working Temperature	-40°C~+85°C	
	Storage Temperature	-40°C~+85°C	
	Protection	IP68	
PHYSICAL	Material	Magenesium alloy main body	
	Dimension(mm)	135*102*47	
	Weight(g)	470	

▲ *Manufacturers may update parameters at any time, please refer to the latest product information.*

C100T Data Controller

C100T control terminal is a versatile data controller crafted specifically for the surveying sector. It boasts an outstanding battery life of up to 18 hours. Its 5.45-inch display is readable in direct sunlight, and with an IP68 protection rating, it can withstand various harsh outdoor conditions. The powerful 8-core processor and Android 11 operating system ensure that the C100T operates efficiently and smoothly, and it is compatible with multiple measurement software applications, facilitating surveying tasks.

CHARACTERISTIC

- Ergonomic design
- Comfortable grip, ultimate operating experience
- Android 11, 8-core 2.0GHz
- 4GB+64GB, Micro SD, up to 512GB
- 5.45-inches, 720*1440px, 5-point capacitive touch
- Supports operation with gloves and wet hands
- IP68, 1.2m drop resistance
- Adaptable to severe tests in harsh environments

Sunlight-readable Screen

With 5.45-inch high-solution sun-proof screen, it can be readable in the sun.

Ultra-long Endurance

C100T controller is equipped with a long-life battery which ensures you a 18h of operation without stopping.

Dual Network Dual Standby

With 4G all netcom communications and dual Sim card option, it can work all day and still remain contactable anytime, anywhere.

High-performance CPU

Eight-core high performance processor enables users to deal with all complicated processing.

ITEM		SPECIFICATION
SYSTEM	Operating system	Android 11
	CPU	8-core 2.0GHz processor
	Memory	4GB RAM + 64GB ROM
	External storage	Micro SD, up to 512GB
PHYSICAL PARAMETERS	Display	Screen size: 5.45-inch
		Resolution: 720*1440px
	Touch Panel	5-point capacitive touch
	Camera	Rear 13MP Support Flash light
	Sensors	Ambient Light Sensor and Accelerometer
	Notification	Audio, Vibration and LED Indicators
	Audio	Type-C(supports OTG)
	Interface	Option1: 1*Nano Sim+1*Micro SD
		Option2: 2*Nano Sim
DATA COMMUNICATION	Bluetooth	BT5.0(BLE)
	WIFI	IEEE: 802.11a/b/g/n/ac
		Dual-baud: 2.4G/5G
	Network	FDD -LTE: B1/B2/B3/B4/B5/B7/B8/B12/B17/B20/B28
		TDD -LTE: B34/B38/B39/B40/B41
		WCDMA: B1/B2/B5/B8
		GSM: B2/B3/B5/B8
		TD-SCDMA: B34/39
	GNSS	GPS/BDS/GNSS/GLONASS/AGPS
	NFC	Supported
ELECTRICAL	Battery (non-removable)	9000mAh (Support Rapid Charging)
		Working time: 18h
		Charging time: ≤5 hours
PHYSICAL	Dimension(mm)	221mm*78mm*16.5mm
	Weight(g)	410.6g
ENVIRONMENT	Working Temperature	-20°C~+55°C
	Storage Temperature	-40°C~+70°C
	Work Humidity	5%~95%
	Shock	Withstand 1.2M pole drop
	Protection	IP68
	ESD	Air discharge: ±15kV Contact discharge: ±8kV

▲ *Manufacturers may update parameters at any time, please refer to the latest product information.*

C500 Data Controller

C500 control terminal is a new Android 12 data collector launched by Spherefix, using Qualcomm's latest industrial grade processor. Equipped with a standard all English keyboard and a 5.5-inch 500nit display screen made of Gorilla glass, it is clear and easy to read in sunlight. In addition, C500 is equipped with Bluetooth 5.0, dual band 2.4G/5G WiFi, and a 4G modem that supports global networks. The built-in 9000mAh battery provides long-lasting endurance, and IP68 protection makes C500 perform well in challenging environments, making data collection tasks easier and more efficient.

CHARACTERISTIC

- Ergonomic design
- Comfortable grip, ultimate operating experience

- Android 12, Qualcomm SM6115 octa-core 2.0GHz
- 4GB+64GB, Micro SD, up to 128GB

- 5.5 inches, 1080*1920px, 5-point capacitive touch
- Supports operation with gloves and wet hands

- IP68, 1.2m drop resistance
- Adaptable to severe tests in harsh environments

Standard Full English Keyboard

A new full British-style keyboard and reserved multiple shortcut buttons, assist users in swiftly completing various operations in industry applications.

Sunlight-readable Screen

The 5.5-inch 1080P resolution industrial display with 500 nits brightness enhances outdoor data collection visibility even in sunlight.

Various Data Communication Methods

Dual-band Wi-Fi and 4G support ensures stable and reliable internet connectivity, while the physical USB 3.0 interface allows for faster data transfer, enabling instant uploads of large project files.

High-performance CPU

C500 is equipped with the Qualcomm SM6115 processor, designed with an 11nm fabrication process, providing powerful performance for smooth CAD drawing management and base map display.

ITEM		SPECIFICATION
SYSTEM	Operating system	Android 12
	CPU	Qualcomm SM6115 octa-core 2.0GHz
	Memory	4GB RAM + 64GB ROM
	External storage	Micro SD, up to 128GB
PHYSICAL PARAMETERS	Display	Screen size: 5.5-inch, 500nit
		Resolution: 1080*1920px
	Touch Panel	5-point capacitive touch
	Camera	Rear 13MP, AF with double white LED Flash
	Sensors	Gyroscope, Accelerometer, Ambient Light and eCompass Sensor
	Other Equipment	Speaker & Mic
		Support Motor
		Support Hand band
		Support Passive Stylus
		Support Charger, Replaceable interface
	Audio	Audio PA
	Interface	Type-C (USB3.0 Supports OTG)
		SIM: one Nano SIM card slot
		Indicator LED
DATA COMMUNICATION	Bluetooth	BT5.0(BLE)
	WIFI	IEEE: 802.11a/b/g/n/ac
		Dual-baud: 2.4G/5G
	Network	GSM: 850/900/1800/1900
		WCDMA: B1/B2/B4/B5/B8
		LTE-TDD: B34/B38/B39/B40/B41
		LTE-FDD: B1/B2/B3/B4/B5/B7/B8/B12/B13/B17/B20/B25/B26/B28
	GNSS	Qualcomm GPS/A-GPS, GLONASS, BDS,Galileo
	NFC	Supported
ELECTRICAL	Battery (non-removable)	9000mAh(Support Rapid Chargin)
		Working time: 22 hours
		Charging time: ≤4 hours
PHYSICAL	Dimension(mm)	227.8*95.8*20.9
	Weight(g)	420
ENVIRONMENT	Working Temperature	-20°C~+65°C
	Storage Temperature	-30°C~+70°C
	Work Humidity	5%~95%
	Shock	1.2M drop onto concrete
	Protection	IP68
	ESD	Air discharge: ±10kV Contact discharge: ±8kV (External interface Contact discharge: 6KV, Air discharge: 8KV)

▲ *Manufacturers may update parameters at any time, please refer to the latest product information.*

SP8635 External Digital Radio

SP8635 is an external high-power transceiver radio specifically developed for the surveying and mapping market, characterized by long communication range, low power consumption, intelligence, and humanized design. It mainly features a high-definition OLED display, menu operation support, intelligent serial port baud rate recognition, intelligent power-on status recognition, interference detection, and remote control capabilities.

CHARACTERISTIC

- Three power levels: high, medium, and low (customizable)
- Transceiver relay functionality
- Automatic recognition of the following baud rate ranges:
- 115200bps, 57600bps, 38400bps, 19200bps, 9600bps
- Compatible with various communication protocols:
- CHCTT450S, Transparent, SOUTH, CHC352®
- OLED screen display
- IP67 protection

Intelligent Baud Rate Recognition

The transceiver features an innovative intelligent serial port baud rate recognition function, which allows for plug-and-play and interoperability between different RTK devices without the need for data cable configuration.

Multi-Mode Operation

This radio supports two modes: single transmission and transceiver relay. It can be used as an external radio for a base station or as a relay, making it convenient for survey personnel to operate in various complex environments, and it allows for easy switching to the required working mode.

OLED Display Screen

This radio supports user-friendly configuration of radio parameters and status inquiries through a local OLED display, allowing users to select the desired functions based on their needs. For instance, it's possible to check current serial port baud rates, radio channels, etc., making the operation of the radio more convenient and efficient.

Multiple Communication Protocols

The radio is compatible with a variety of industry data transmission protocols, supporting TT450S, Transparent, CHC, and other transmission protocols.

ITEM		SPECIFICATION
GENERAL	Frequency	410MHz~470MHz
	Operating Mode	Transceiver
		Transmitter
		Radio Repeater
		Network Repeater
	Channel Width	12.5KHz/25KHz
	Channel	Up to 32 programmable channels (user selectable)
	Frequency Stability	<±1ppm
POWER	Operating Voltage	9V~16V
	Power Consumption(Typical)	Transmit Output Power H: (28W) 78W@12V DC
		Transmit Output Power M: (22W) 60W@12V DC
		Transmit Output Power L: (5W) 35W@12V DC
		Sleep State 2W@12V DC
MODEM	Data Rate	4800bps/9600bps/19200bps
	Data Speed of Serial Interface	9600, 19200, 38400, 57600, 115200bps
	Modulation	GMSK/4FSK
TRANSMITTER	RF Output Power	H: 28W 44.5±0.5dBm @DC 12V
		M: 22W 43.4±0.5dBm @DC 12V
		L: 5W 37±1dBm @DC12V
	RF Power Stability	±1dBm
RECEIVER	Sensitivity	<-114dBm@BER 10-3, 9600bps
DATA COMMUNICATION	Bluetooth	Built-in Bluetooth Antenna
		Bluetooth Version: 2.0/4.0
ENVIRONMENTAL	Protection	IP67
	Operating Temperature	-40℃~65℃
	Storage Temperature	-50℃~85℃
PHYSICAL	Dimension (H*W*D)	175mm*130mm*86.5mm
	Weight	2000g
	Data Connector	LEMO 5pin
	Connector	TNC female

▲ *Manufacturers may update parameters at any time, please refer to the latest product information.*