



ROHS, TS16949, ISO9001

S6

High Precision Positioning Terminal Product
Manual

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Lead in

This document indicates the main features of the S6, the terminal product of high precision positioning.

This document aims to indicate the hardware interface, electrical characteristics, mechanical specifications, and other related information of the S6, the terminal product of high precision positioning. With the help of this document, the hardware design guide book and application manual of Simple, can S6 be quickly used in the wireless communication field.

1. Product Overview

S6, the high-precision positioning terminal, intelligently integrated the multi-system positioning scheme of BDS, GPS and GLONASS, and adopts the self-developed Beidou differential positioning and integrated navigation positioning technology, with the use of its own satellite positioning technology and integrated navigation technology, to ensure the accuracy in various comprehensive road conditions. Under the no odometer signal, no speed pulse signal, no limitation of the installation direction situations, it can not only realize real-time and high precision 3D positioning, 3D velocity measurement, 3D attitude measurement, but also effectively locate in areas of weak satellite signal or no satellite signal, such as urban business districts, jungles, under viaduct, tunnels, underground parking lots, airports, etc., with the integration of differential positioning calculating and DR navigation positioning technology, providing high positioning accuracy and availability for vehicle users.

- Multi-system satellites positioning
- Centimeter-level positioning accuracy
- Data communication
- High performance Inertial navigation *
- Fast on-line calibration
- Strong installation adaptability

* Note: Attitude related need to configure inertial navigation

Multi-system satellites positioning

S6, high-precision positioning terminal, adopts BDS/GPS/GLONASS multi-system RTK satellite intelligent integration positioning scheme.

Data communication

Support 4G full netcom, access to CORS network to obtain differential data and return the data to server to ensure bidirectional communication between the vehicle terminal and the server.

High performance inertial navigation

S6, the high-precision positioning terminal, can effectively locate in areas of weak satellite signal or no satellite signal, such as urban business districts, jungles, under viaduct, tunnels, underground parking lots,

airports, etc., with the integration of differential positioning calculating and DR navigation positioning technology. It can quickly on-line standardize, and after each power-on, the zero offset is estimated by means of gravity field information and single-dimensional Kalman filter technology, and the convergence of the filter is accelerated by satellite navigation information.

Strong installation adaptability

There is no special requirement for the installation angle of the product, and the ideal positioning effect can be achieved by just keeping it to lie horizontally. The adaptive algorithm can automatically identify and filter the installation error angle.

There is no special requirement for the installation Angle of the product, and the ideal positioning effect can be achieved by keeping the water as far as possible. The adaptive algorithm can automatically identify and filter the installation error Angle, and fix it in the basic calculation equation of inertial navigation.

2. Main Performance

Frequency 1	GPS L1 1 575 .42MHz, C/A code; L2 1227.6MHZ, C code; Beidou (COMPASS/ BD2) B1 1561.098MHz; B2 1 166 . 22MHz- 1217 . 37MHz; GLONASS L1 1 6 0 2 MHz;	
Refresh rate	Default 1 Hz, support 1-10Hz	
Sensitivity	Tracking	-163d Bm
	Recapture	-159d Bm
	Cold start	-148d Bm
	Hot Start	-155d Bm
Positioning time	Hot Start	1s
	A-GNSS aid	10s
	Cold start	29s

Horizontal positioning accuracy	Autonomous positioning	3 m
	Wide area difference	2.5 m
	RTD	50cm
	RTK	2 cm
Speed measurement accuracy	0.1 m/s	
Azimuth accuracy	0.5 degrees	
Height limit	> 18,000 m	
Speed limit	> 515 m/s	
Acceleration limit	>4G	
Output protocol	NMEA 0183	9600 bps, 8 data bits, no parity, 1 stop bits (default) 1 Hz: GGA, GLL, GSA, GSV, RMC, VTG
Enter differential format	RTCM 3. X	

3. Electrical parameters

3.1 Electrical maximum

Parameters	Symbols	Minimum value	Maximum	Units
USB supply voltage (VCC)	Vcc	5.0	5.5	V
Vehicle power supply voltage (VCC)	Vcc	9V	14.4	V
IO voltage	VTTL	0.5	3.6	V

Maximum acceptable ESD level (contact)	VESD(HBM)		2000	V
Storage temperature		- 40	+ 85	°C

3.2 Working Conditions

Parameters	Symbols	Minimum value	Typical value	Maximum value	Units
USB supply voltage	Vcc	5.0	5.0	5.5	V
Vcc peak current	Ipeak			3	A
Vehicle power supply voltage (VCC)	Vcc	9V	12	14.4	V
Vcc peak current	Ipeak			3	A
Operating temperature		- 30	25	+ 80	°C
Humidity				95	%

4. Interface and transmission

S6, high-precision positioning terminal, provides many kinds of transmission mode and peripheral interface ,including vehicle mode power interface, external port of other devices, USB interface, SIM interface.

S6, high-precision positioning terminal, can use the following modes to transmit high-precision positioning data.

1. Network transmission, the default transmission protocol of the terminal is JT808 standard protocol.

2. USB interface, USB1 interface can directly output high-precision positioning data.
3. Bluetooth mode, this terminal with optional built-in Bluetooth transmission, based on SPP Bluetooth, it can be connected with other Bluetooth devices.

The peripheral interface description of this terminal in detail as below:



Interface description	Interface location	Interface function	Description
LED status indicator	LED- Red	4G network status indicator	Network found: Keep flashing
	LED-Green	GNSS positioning indicator	Positioning finished: Keep flashing
	LED- Blue	Charging indicator	Charging completed: constant on
	LED- Yellow	Power indicator	Turn on: constant on
POWER	Upper Left	B	Connect the negative of battery
	Lower left	ACC+ 12V	Connect with vehicle ACC
	Upper right	B+	Connect to the positive of battery
	Lower right	B+	Connect to the positive of battery
RS232	Upper left	GND	Ground wire
	Lower left	RS232-TXD	Terminal RS232 serial port output
	Upper right	+5V	Connect the +5V power supply
	Lower right	RS232-RXD	Terminal RS232 serial port input
Power switch	On/ off	Power on/off control	Left: power off; right: power on
TYPE- C USB	USB1	GNSS information USB interface output	Connect the USB cable to output GNSS information
SIM card holder	SIM	4G communication SIM card	Full Netcom SIM support



Interfaces	Interface location	Interface function	Description
MICRO USB	USB2	Terminal configuration interface	Through this interface, you can configure the differential account and background
WIFI ANT	WIFI ANT	Connect external WIFI	Connect external WIFI
LTE ANT	LTE ANT	Connect 4G antenna	Connect external 4G antenna
GNSS ANT	GNSS ANT	Connect external GNSS antenna	Connect external GNSS antenna

5. Types and Instructions

S6 , high-precision positioning terminal. is divided into several different types of configuration devices according to different performance. The mapping between types and configuration is shown as below:

Types	Instructions
S6	Dual frequency RTK (GPS L1+L2, Beidou B1+B2) centimeter-level positioning
S6G	Dual-frequency RTK (GPS L1+L2, Beidou B1+B2) centimeter-level positioning + inertial navigation
S6K	Single frequency RTK centimeter-level positioning
S6KG	Single frequency RTK centimeter-level positioning + inertial navigation

S6D	RTD sub-meter positioning
S6DG	RTD Sub-meter positioning + inertial navigation

6. Units of the Product

Name	Specifications	Quantity
S6 high precision positioning terminal		1
GNSS antenna	Optional based on performance metrics	1
4G antenna	Optional based on usage scenario	1
12V power cable		1
USB cable	Type-C cable	1
USB cable	Micro-USB cable	1

7. Precautions

1. Do not operate with power on/connected.
2. Insert the SIM card downward.
3. The dynamic vehicle test required to fix the device (horizontally).
4. The module is electrostatic sensitive product. The RF circuit on the module contains electrostatic sensitive components, please pay attention to do ESD protection during welding, installation, and transportation. Do not touch the module pins directly, otherwise the module may be damaged.



ESD CAUTION

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