

SPiRiT 24 Channel GPS+GLONASS Receiver DuoStar-2000

Reliable solution for high-precision dynamic navigation

More than 10 years SPiRiT is developing navigation receivers. Their quality and reliability are proven by a range of customers like Furuno, JRC, NEC, Leica in the most challenging conditions in applications for positioning, guidance, navigation, and timing in government, industry and commerce.

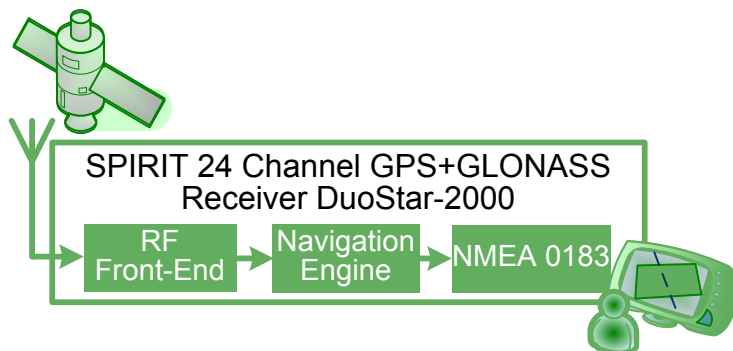
SPiRiT licenses reference design of a combined L1 GPS + GLONASS 24 channel receiver that performs extremely well even on dynamic objects (with high acceleration rates and jerks) in severe vibration and challenging temperature conditions.

Combined GPS + GLONASS system for more reliability and better stability

Combined GPS + GLONASS system offers potentially 56 satellites (32 GPS + 24 GLONASS). In this case a GPS+GLONASS receiver can use all in view (up to 24) satellites, which results in more reliability and stable performance in locations with restricted visibility as more satellites are visible at any given moment in the non-blocked sky-areas.

SPiRiT 24-channel GPS+GLONASS Receiver DuoStar-2000

SPiRiT 24-channel GPS + GLONASS Receiver DuoStar-2000 uses the advantages of both GPS and GLONASS systems for the highest reliability of the object positioning for both static and dynamic navigation in obstructed operating environments. It consists of a hardware and software part: RF front-end, FPGA based correlator and software-based navigation data processing. The main advantage of this approach lies in the solution's flexibility – it can be easily transferred to a broad range of platforms and optimized for particular applications.



SPiRiT DuoStar-2000 has small physical dimensions, low BOM cost, low start time and high sensitivity. These features combined with the highest precision of coordinates, velocity and time determination in city-areas, where many of the satellites can be blocked, make it the best choice for consumer navigation products.

Thanks to flexibility of the developed approach SPiRiT DuoStar-2000 Receiver can be also used in professional navigation systems which require highly accurate determination of object's coordinates and velocity.

Benefits

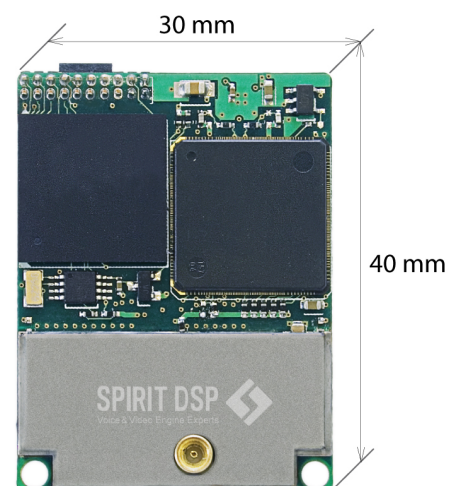
- Low BOM cost
- Compact physical dimensions 30x40x6 mm
- Support for both GPS and GLONASS systems

Key Features

- High timing accuracy
- High velocity accuracy
- High sensitivity
- Low start time
- 24 channels to support all-in-view satellites
- DGPS support
- SBAS support

Applications

- Consumer navigation
- Automotive navigation
- Marine navigation
- Aircraft navigation



Performance¹

Frequencies	<ul style="list-style-type: none"> GPS L1 and GLONASS L1
Channels	<ul style="list-style-type: none"> 24 channels
Protocols	<ul style="list-style-type: none"> NMEA 0183 v.2.3, RTCM SC104 v.2.2, DS-2000 Binary
Positioning accuracy²	<ul style="list-style-type: none"> 3 m (CEP) autonomous, 1 m differential
Timing accuracy	<ul style="list-style-type: none"> 50 ns (RMS)
Velocity estimation accuracy	<ul style="list-style-type: none"> 0.05 m/sec (RMS)
Dynamics	<ul style="list-style-type: none"> Acceleration up to 15 g, jerk up to 3 g/s
Sensitivity	<ul style="list-style-type: none"> -140 dBm in autonomous acquisition mode -150dBm in tracking mode
Reacquisition time³	<ul style="list-style-type: none"> 1 s
Hot start⁴	<ul style="list-style-type: none"> 4 s
Cold start⁵	<ul style="list-style-type: none"> 30 s
Raw data and position output	<ul style="list-style-type: none"> up to 5 Hz

Physical & Electrical

Size⁶	<ul style="list-style-type: none"> 30x40x6 mm
Weight⁶	<ul style="list-style-type: none"> 10 gr
Power consumption⁷	<ul style="list-style-type: none"> Input voltage 3.3 ±5% VDC, power consumption 600 mW
Antenna	<ul style="list-style-type: none"> Active or passive external antenna Active antenna power supply: 3 V, 20 mA
Communication ports	<ul style="list-style-type: none"> 2 RS-232 serial port (UART) capable of 600 to 115200 bps⁸ 1PPS
Input/Output Connectors	<ul style="list-style-type: none"> Main 20-pin dual row male header Antenna Input MMCX female
Environmental	<ul style="list-style-type: none"> Temperature range (storage and operating) -40°C ... +80°C Humidity 95% non-condensing

What is GLONASS Navigation System?

The Global Navigation Satellite Systems (GLONASS) constellation is a radio satellite navigation system supported by the Russian government as a national high-priority project. GLONASS is to be used alongside the U.S. Global Positioning System, which Washington can switch off for civilian subscribers, as it did during recent military operations in Iraq. The satellites are organized into three orbital planes with an inclination of 64.8 degrees, making a complete orbit in approximately 11 hours, 15 minutes, 40 seconds. Each satellite broadcasts L1 and L2 signals on unique frequency channels. Plans have been announced for an L3 signal.

The GLONASS constellation is to reach 24 satellites in 2009, thus securing almost worldwide coverage. 30 satellites are to be available in 2012. More information about operation status of the GLONASS constellation and capabilities can be found at: www.glonass-ianc.rsa.ru

¹ Typical values. Performance specifications subject to GPS/GLONASS system characteristics, US DOD operational degradation, ionospheric and tropospheric conditions, satellite geometry, baseline length, multipath effects and the presence of intentional or unintentional interference sources.

² 50% (CEP), 24-hour observation, signal strength -130 dBm.

³ Typical value

⁴ Typical value. Ephemeris and almanac are saved, approximate position and time are available

⁵ Typical value. Neither ephemeris nor almanac are available.

⁶ Unshielded version

⁷ Without active antenna power consumption

⁸ External level converter from LV-TTL to RS-232 is needed.

CONTACTS

General: 1-408-540-6033
www.spiritdsp.com

Russia: 7-495-661-21-78

France: 33-623-021-563

Israel: 972-3-736-9763

Italy: 39-02-6680-2557

Germany: 49-641-48-08300

USA: 1-888-374-4410

Canada: 1-888-374-4410

Japan: +81-3-6361-8080

Taiwan: 886-2-2888-1010, 886-2-2696-0055

Korea: 82-70-7780-9910, 82-2-33473-5080

China: 86-21-63502288-820

Singapore: 65-6744- 9789