LIANSHI

F21

GNSS Receiver For Unmanned Aerial Vehicles

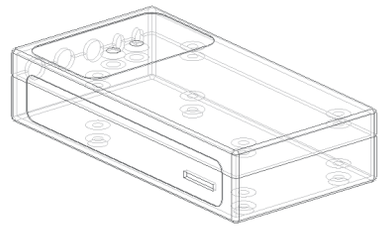
Make accuracy fly.
The LianShi F21 is a rugged, compact, lightweight GNSS receiver that provides professional-grade positioning information to any UAV. purpose-designed for Real Time Kinematics （RTK）and Post Processing Kinematics （PPK）applications employed by UAV in a variety of industries, including plant protection, aerial survey, mapping etc.

F21 receiver with built-in GNSS high-precision board, high-speed large capacity storage, flexible communication, event camera trigger and 3D attitude sensor, provides a perfect system solution for UAV.

LianShi F21

Features

- Small, rugged, lightweight GNSS receiver for UAVs;
- Bluetooth, CAN, serial and USB support;
- Data logging internally and to external drive;
- Can be easily configured via Bluetooth link;
- Event mark function supported;
- Built-in attitude sensor.



DataSheet

PERFORMANCE

Channel Configuration:120 channels

Signal Tracking

GPS :L1,L2,L2C
GLONASS:L1,L2
BDS:B1,B2
Galileo:E1,E5b
SBAS
QZSS

Maximum Data Rate

Measurements: 1Hz, 2Hz, 5Hz, 10Hz, 20 Hz and 50Hz
Position: 1Hz, 2Hz, 5Hz, 10Hz, 20 Hz and 50Hz

Horizontal Position Accuracy (RMS)

Single Point L1: 1.5m
Single Point L1/L2: 1.2m

Code differential GNSS positioning

SBAS: 0.6m
DGPS: 0.4m

Real Time Kinematic surveying

Horizontal: 10mm+1ppm
Vertical: 20mm+1ppm

Postprocessed Kinematic (PPK) Surveying

Horizontal: 10mm+1ppm
Vertical: 20mm+1ppm

Time Accuracy

20 ns RMS

Velocity Accuracy

0.03 m/s RMS

Time to First Fix

Cold start: <50 seconds
Hot start: <35 seconds

Signal Reacquisition

L1: <0.5 seconds (typical)
L2: <1.0 seconds (typical)

PHYSICAL AND ELECTRICAL

Dimensions:100mm X 52mm X 23mm
Weight:153g

Power

Input voltage: DC7V ~ 18V, with polarity reverse protection
Power consumption: ≤ 1.0W

COMMUNICATION AND DATA STORAGE

2 RS-232 serial ports
1 CAN (optional)
Radio modem: frequency range from 410 MHz to 470 MHz
Bluetooth:fully integrated, fully sealed 2.4 GHz communications port
Baud rate: 9600-921600
Communication: radio communication module
Data storage Default 8G, expandable 16G to 128G
Data download: mini USB high-speed download

Data Formats

Data output: NMEA-0183, raw data
Differential data: RTCM2.3 / 3.0 / 3.1 / 3.2, CMR

ENVIRONMENTAL

Temperature

Operating -40 ℃ ~ +70 ℃
Storage -45 ℃ ~ +80 ℃
Humidity: 95% non-condensing

Tel: +86 21-61200180

Fax: +86 21-39883511

E-mail: globalsales@allynav.cn

Address: Room 201, Building No.1, Lane 215, Gaoguang Road, Qingpu District, Shanghai City, P.R.C.

LIANSHI

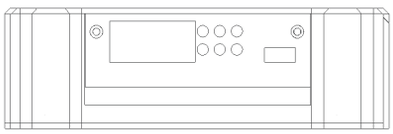
F20

GNSS Receiver For Unmanned Aerial Vehicles

F20 UAV receiver is a multi-function high-precision GNSS receiver, which installed GNSS high-precision board, 3G module or radio communication module, high-speed large storage capacity, high-speed USB download, CAN/serial communications, event camera trigger and 3D attitude sensor, provides a more perfect system solution for UAV.

LianShi F20

Features



- Standard size (5 × 7cm) or large size (6 × 100 cm) board supported;
- Radio or 3G communication model;
- PPK or RTK work model supported;
- 12V or 5V power supply;
- Aerial camera trigger function;
- High-speed USB download, U disk read mode.

DataSheet

PERFORMANCE

Channel Configuration: 120 channels

Signal Tracking

GPS :L1,L2,L2C
GLONASS: L1,L2
BDS: B1,B2
Galileo: E1,E5b
SBAS
QZSS

Maximum Data Rate

Measurements: 1Hz, 2Hz, 5Hz, 10Hz, 20 Hz and 50Hz
Position: 1Hz, 2Hz, 5Hz, 10Hz, 20 Hz and 50Hz

Horizontal Position Accuracy (RMS)

Single Point L1: 1.5m
Single Point L1/L2: 1.2m

Code differential GNSS positioning

SBAS: 0.6m
DGPS: 0.4m

Real Time Kinematic surveying

Single Baseline <30 KM
Horizontal: 10mm+1ppm
Vertical: 20mm+1ppm

Postprocessed Kinematic (PPK) Surveying

Horizontal: 10mm+1ppm
Vertical: 20mm+1ppm

Time Accuracy

20 ns RMS

Velocity Accuracy

0.03 m/s RMS

Time to First Fix

Cold start: <50 seconds
Hot start: <35 seconds

Signal Reacquisition

L1: <0.5 seconds (typical)
L2: <1.0 seconds (typical)

PHYSICAL AND ELECTRICAL

Dimensions: 108mm X 65mm X 34mm
Weight: 196g

Power

Input voltage: DC 7V ~ 18V, with polarity reverse protection
Power consumption: ≤ 1.0W

COMMUNICATION PORTS

2 RS-232 serial ports
1 CAN (optional)
Radio modem: frequency range from 410 MHz to 470 MHz
Cellular:GPRS and 3G
Bluetooth:fully integrated, fully sealed 2.4 GHz communications port
Data storage Default 8G, expandable 16G to 128G
Data download: mini USB high-speed download

Data Formats

Data output: NMEA-0183, raw data
Differential data: RTCM2.3 / 3.0 / 3.1 / 3.2, CMR

ENVIRONMENTAL

Temperature

Operating: -40 ℃ ~ +70 ℃
Storage: -45 ℃ ~ +80 ℃
Humidity: 95% non-condensing

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LIANSHI

R30 GNSS Receiver

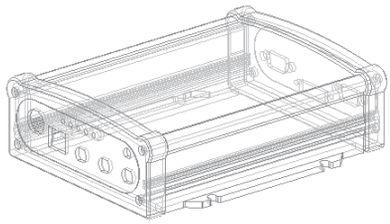
Overview

The Lianshi R30 receiver is a GNSS receiver designed to provide Ag and MC professionals with maximum features and flexibility. The receiver's compact form factor, powerful feature set make for an ideal combination supporting a wide range of high-accuracy positioning applications, including: RTK rover； mobile field base station； post processed data collection.

R30 GNSS Receiver

Features

- Available with internal radio or no radio;
- Available with integrated 3G or without it,
- Standard Ethernet communication interface is convenient to data high-speed network transmission;
- Can be configured as base station or mobile station to support a variety of operating modes.



DataSheet

PERFORMANCE

Channel Configuration: 384 channels

Signal Tracking

GPS: L1,L2,L2C,L2P,L5

GLONASS: L1,L2

BDS: B1,B2,B3

SBAS

Maximum Data Rate

Measurements: 1Hz, 2Hz, 5Hz, 10Hz, 20 Hz

Position: 1Hz, 2Hz, 5Hz, 10Hz, 20 Hz

Horizontal Position Accuracy (RMS)

Single Point L1: 1.5m

Single Point L1/L2: 1.2m

Code differential GNSS positioning

SBAS: 0.6m

DGPS: 0.4m

Static GNSS surveying

Horizontal: 5mm+1ppm

Vertical: 10mm+1ppm

Real Time Kinematic surveying

Horizontal: 10mm+1ppm

Vertical: 20mm+1ppm

Time to First Fix

Cold start: <50 seconds

Hot start: <35 seconds

Signal Reacquisition

L1: <0.5 seconds (typical)

L2: <1.0 seconds (typical)

Time Accuracy

20 ns RMS

Velocity Accuracy

0.03 m/s RMS

PHYSICAL AND ELECTRICAL

Dimensions: 182mm×52mm×134mm

Weight: 1.1Kg

Power

Input voltage: DC8V ~ 32V, with polarity reverse protection

Power consumption

≤ 3.0W, in RTK base mode with internal radio in use

COMMUNICATION PORTS

Full RS-232 serial (Dsub 9 pin) on Port 1 and Port 2

Ethernet

Radio modem: frequency range from 410 MHz to 470 MHz

Cellular: GPRS and 3G

Bluetooth:fully integrated, fully sealed 2.4 GHz communications port

Data storage: 8 GB external memory.

Data Formats

Data output: NMEA-0183, raw data

Differential data: RTCM2.3 / 3.0 / 3.1 / 3.2, CMR

ENVIRONMENTAL

Temperature

Operating -40 ℃ ~ +70 ℃

Storage -45 ℃ ~ +80 ℃

Humidity: 95% non-condensing

Environment protection: IP65

Shock

Designed to survive a 2 m (6.6 ft) pole drop onto concrete.

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Fax: +86 21-39883511

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LIANSHI

R20 GNSS Receiver

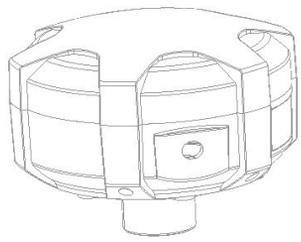
Overview

The LianShi R20 GNSS receiver provides you the feature in a flexible and scalable system. It can be easily configured to suit your applications, including base, rover, or a combination of base and rover functionality.

Because of the excellent flexibility and performance, R20 has been widely used in various industries, such as precision agriculture, mechanical control, surveying and mapping, geographic information, construction and mining, UAV (mobile base stations) and so on.

R20 GNSS receiver

Features



- Small size, portable and cost-effective;
- Great mobility;
- Flexible radio communication protocol supported;
- Available in base only, rover only, or base and rover configurations.

DataSheet

PERFORMANCE

Channel Configuration: 120 channels

Signal Tracking

GPS: L1,L2,L2C
GLONASS: L1,L2
BDS: B1,B2
Galileo: E1,E5b
SBAS
QZSS

Horizontal Position Accuracy (RMS)

Single Point L1: 1.5m
Single Point L1/L2: 1.2m

Code differential GNSS positioning

SBAS: 0.6m
DGPS: 0.4m

Static GNSS surveying

Horizontal: 5mm+1ppm
Vertical: 10mm+1ppm

Real Time Kinematic surveying

Horizontal: 10mm+1ppm
Vertical: 20mm+1ppm
Initialization time: typically<10 seconds
Initialization reliability: typically>99.9%

Maximum Data Rate

Measurements: 50 HZ
Position: 50 HZ

Time to First Fix

Cold start: <50 seconds
Hot start: <35 seconds

Signal Reacquisition

L1: <0.5 seconds (typical)
L2: <1.0 seconds (typical)
Time Accuracy: 20 ns RMS
Velocity Accuracy: 0.03 m/s RMS
Velocity Limit: 515 m/s

PHYSICAL AND ELECTRICAL

Dimensions: 136mm X 89mm
Weight: 0.7Kg

Power

Input voltage: DC 6V ~ 28V, with polarity reverse protection

Power consumption

≤ 3.0W, in RTK base mode with internal radio in use

COMMUNICATION PORTS

Full RS-232 serial (Dsub 9 pin) on Port 1 and Port 2

Data Formats

Data output: NMEA-0183, raw data
Differential data: RTCM2.3 / 3.0 / 3.1 / 3.2, CMR, RTCA

ENVIRONMENTAL

Temperature

Operating -40 ℃ ~ +70 ℃
Storage -45 ℃ ~ +80 ℃
Humidity: 95% non-condensing
Environment protection: IP67

Shock

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LIANSHI

T90

T90 console for Ag and MC

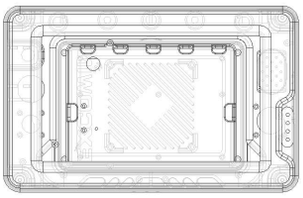
The LianShi T90 display is a portable,robust android tablet. T90 is equipped with a built-in high-precision GNSS board which offers centimeter level accuracy. It is a perfect display for agriculture construction and mining.

T90 also provides RS-232/485, USB 2.0, GPIO, CAN, CVBS signal interface to connect with other equipments, and supports WI-FI, 3G / 4G LTE wireless communication.

LianShi T90

Features

- Built-in centimeter high precision OEM board;
- Android platform ready for future development;
- Various communication interface supported, including Ethernet, CANBUS;
- Wide voltage input range.



DataSheet

General
CPU: ARM Cortex-A7
GPU: ARM Mali-400
RAM: 1GB Storage：2GB
Micro SD: Extensible：8GB

Display Parameters
9-inch LED display, 4-wire resistive touch
Resolution: 800 x 480 pixels (WVGA)
Brightness: 500 nits (standard), visible in the strong light
Contrast: 600:1 (standard)

Communications Parameters
WIFI: 802.11 a/b/g/n 2.4 G / 5G dual-band
1 x WWAN module
1 x GPS module
Extensible Mini - PCIe, 3.5 G / 4 GLTE module

Physical Parameter
Shell: aluminum alloy
Size: 270 mm x 170 mm x 64 mm
Weight: 1.4 KG (basic configuration)
Protection grade: IP65

Positioning Module
Built-in high-precision positioning board,
real-time solution can reach up to centimeter level

Electrical Parameters
Power input: 9-36 VDC, wide voltage power supply input
Power: < 8 w
Protection: over-current over-voltage protection, short-circuit protection

Environmental Index
Operating temperature: - 20 ℃ to 70 ℃
Storage temperature: - 30 ℃ to 80 ℃
Relative humidity: 0% to 90%, @ 40 ℃ (no condensation)

IO Interface
1 x USB 2.0 support OTG
1 x Air plug power cord 19 core
(including 1 x RS232, 1 x LAN 1 x RS232/485,
1 x CANBUS2.0, 4-way GPIO)
1×SIM slot
3 x TNC type connector, 2 x type SMA connector
UART (TTL) serial port
1x VGA+HDMI+LVDS display output

Parts
Air plug the power cord (100 cm)
Air plug power cord 19 core the I/O interface (150 cm)
RAM vehicle mount

Other Parameters
4 LED indicator lights
Built-in speakers (2 w)
1 switch button, 1 reset hole
Installation support VESA 75 stents
(75 x75mm positioning hole)
Can replace various GNSS boards according to the needs

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LIANSHI

D10

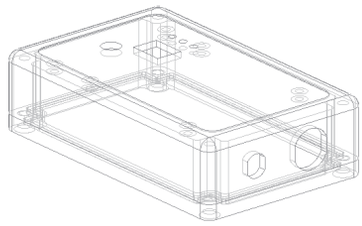
D10 external transceiver radio

The LianShi D10 radio is designed to support all aspects of GNSS data transmission. It offers high sensitivity, low interference, high efficiency, flexible configuration options and rugged reliability. It can be widely used in intelligent transportation, precision agriculture, surveying and mapping, mechanical control, geographic information, UAV RTK communications and other industries.

LianShi D10

Features

- Transceiver radio, frequency range 410-470MHz;
- Convenient front panel display and configuration;
- Rugged housing for robust reliability.



DataSheet

General	
Communications	1 RS-232 port,38.4kpbs
User Interface	2 navigation buttons,10 channels
Power	
External	8.0VDC to 32VDC
During RX	0.5W nominal@12.0VDC
During TX	3W nominal@12.0VDC
Modem Specifications	
Link Rate	9600bps,19200bps,38400bps
Modulation	GSMK,4FSK
Link Protocols	Transparent EOT,TRIMTALK,SOUTH
Radio Specifications	
Frequency Bands	410Mhz-470Mhz
Frequency Control	Frequency stability ±1.0 ppm
Sensitivity	-115dBm@BER 10-3 ,9600bps
Environmental Specifications	
Enclosure	IP67
Operating Temperature(receiver)	-40℃ to +70℃
Operating Temperature(transmitter)	-40℃ to +60℃
Storage Temperature	-40℃ to +85℃
Mechanical Specifications	
Dimensions	126×71×30mm
Weight	300g

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LIANSHI

R21 GNSS Receiver

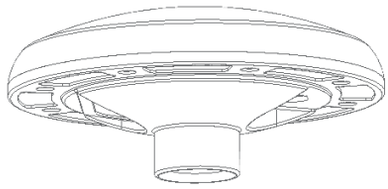
Overview

The Lianshi R21 provides an integrated L1 GPS+GLONASS or GPS+GLONASS receiver and antenna in a single rugged housing. It offers cost-effective sub-meter position accuracy.R21 is available with bluetooth technology to provide wireless connections. It is widely used in machine drill application and Ag guidance.

R21 GNSS Receiver

Features

- Multi-satellite system for complex environments;
- Highly integrated with the GNSS antenna and OEM board;
- Small size, easy to install.



DataSheet

PERFORMANCE

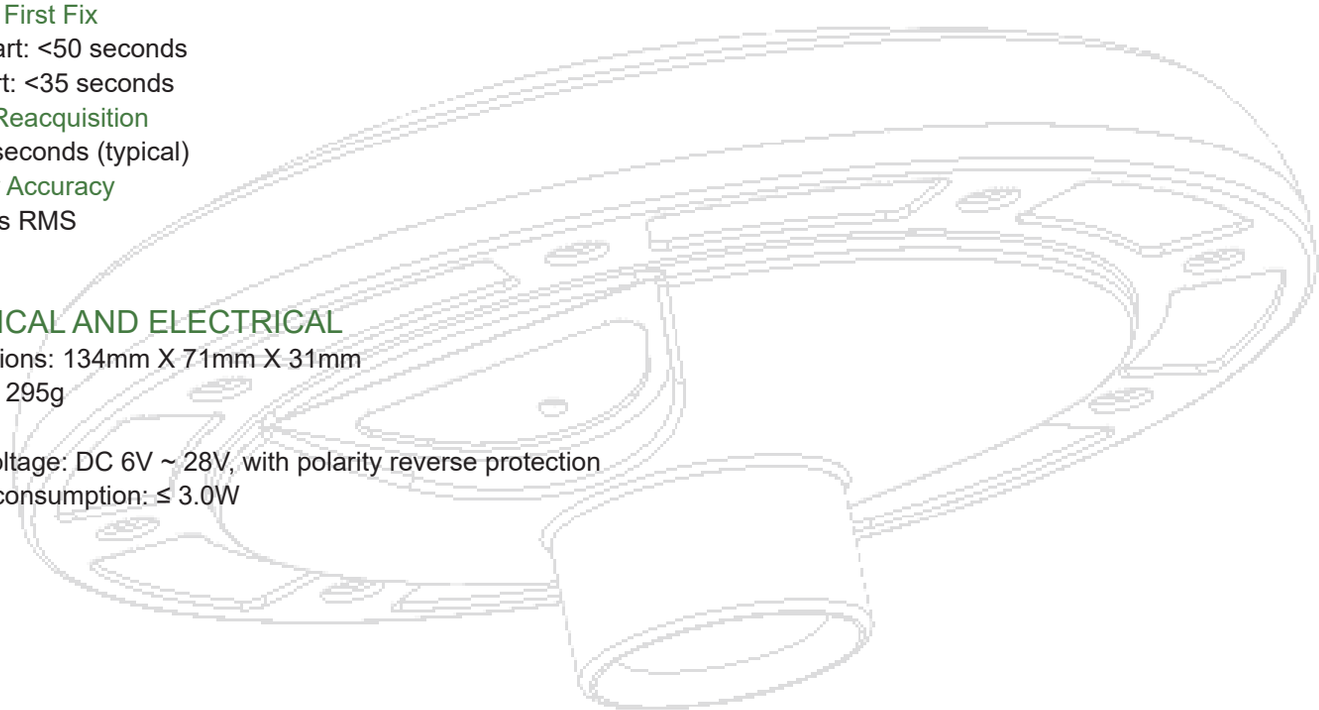
Signal Tracking
GPS: L1
GLONASS: L1
BDS: B1
SBAS
Maximum Data Rate
Position: 1Hz, 2Hz, 5Hz, 10Hz, 20 Hz
Horizontal Position Accuracy (RMS)
Single Point L1: 1.5m
Code differential GNSS positioning
SBAS: 0.6m
Initialization time: typically<40 seconds
Initialization reliability: typically>99.9%
Time to First Fix
Cold start: <50 seconds
Hot start: <35 seconds
Signal Reacquisition
L1: <1 seconds (typical)
Velocity Accuracy
0.03 m/s RMS

COMMUNICATION PORTS

1 RS-232 serial ports,Baud rate: 9600-115200
Data download: mini USB high-speed download
Data Formats
Data output: NMEA-0183, raw data

ENVIRONMENTAL

Temperature
Operating -40 ℃ ~ +70 ℃
Storage -45 ℃ ~ +80 ℃
Humidity: 95% non-condensing
Environment protection: IP65



PHYSICAL AND ELECTRICAL

Dimensions: 134mm X 71mm X 31mm
Weight: 295g
Power
Input voltage: DC 6V ~ 28V, with polarity reverse protection
Power consumption: ≤ 3.0W

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