



GNSS RECEIVER

Sigma-3S



Sigma-3S is a powerful and reliable receiver for high-precision navigation systems based on our 874 channel chip, equipped with the internal 4G/LTE/3G card, secure, accessible microSD, and microSIM cards.

The Sigma-3S receiver can operate as a receiver for post-processing, as a Continuously Operating Reference Station (CORS) or portable base station for Real-time Kinematic (RTK) applications, and as a scientific station collecting information for individual studies, such as ionosphere monitoring and the like.

In a word, it includes everything you need to perform a highly efficient job.

DATA SHEET

VERSION 1.0 JULY 28, 2021



Sigma-3S

GNSS Receiver

Total 874 channels: all-in-view

Signals Tracked

GPS C/A, L1C(P+D) including TMBOC(6,1,4/33) , P1, P2, L2C(L+M), L5(I+Q)
GLONASS C/A, P1, P2, L2C, L3(I+Q)
Gallileo E1(B+C) including CBOC(6,1,1/11), E5A(I+Q), E5B(I+Q), AltBoc, E6(B+C)
QZSS C/A, L1C(P+D) including TMBOC(6,1,4/33), L2C(L+M), L5(I+Q), L6(L61/L62), L1S, L1Sb, L5S
BeiDou B1, B1C(P+D) including TMBOC (6,1,4/33), B2B(I+Q), B2, B2A(I+Q), AltBoc, B3
L-band: 1525-1560 MHz
SBAS L1, L5(P+D)
IRNSS L5, S
L-band: 1525-1560 MHz (optional)¹

Autonomous Accuracy (rms) <2 m

Static, Fast Static Accuracy (rms) Horizontal: 3 mm + 0.1 ppm * base_line_length²
Vertical: 3.5 mm + 0.4 ppm * base_line_length

Kinematic Accuracy (rms) Horizontal: 8 mm + 1 ppm base_line_length
Vertical: 15 mm + 1 ppm * base_line_length

PPK Accuracy Horizontal: 8 mm + 1 ppm base_line_length
Vertical: 10 mm + 1 ppm * base_line_length

Network RTK with any CORS system Horizontal: 8 mm + 0.5 ppm * base_line_length
Vertical: 15 mm+ 0.5 ppm * base_line_length

RTK (OTF) Accuracy (rms) Horizontal: 8 mm + 1 ppm * base_line_length
Vertical: 15 mm + 1 ppm * base_line_length

DGPS Accuracy (rms) < 0.25 m (post-processing)
< 0.5 m (real-time)

Reacquisition <1 second

Power Management

Battery Rechargeable, Lightweight Li-Ion battery 42.5 Wh (nom.)

Operation Time 12 hours on one charge

External Power Input 10-40 V DC

Power-over-Ethernet PoE using splitter and injector

Data Storage

Up to 64 GB of onboard non-removable memory for data storage

¹ Hardware ready

² For good observation conditions and proper length of observation session

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Radio

4G LTE Mini Card	LTE, HSPA+, HSDPA, HSUPA, WCDMA, GSM, GPRS, EDGE (up to 100 Mbps) LTE, EV-DO, 1xRTT CDMA (up to 100 Mbps)
MicroSIM card slot	One; user accessible, fully sealed
Radio Modem	Internal 406-470MHz UHF radio Internal 902-928/ 868-870 MHz ISM radio (optional)
Base Power Output	2 W (EERP)
Maximum Distance Range	6.2 miles/10 km ³

Input/Output

Two high speed RS232 serial ports (up to 460.8 Kbps) 7 pin ODU

High speed configurable RS232/RS422 serial port (up to 460.8 Kbps) M12, 8 pin

High speed USB 2.0 dual-role port (device or host), 5 pin ODU

Full-duplex 10BASE-T/100BASE-TX Ethernet port 7 pin ODU

CAN 2.0 M12, 8 pin

Two 1 PPS outputs, BNC

- Synchronized to UTC or any selected satellite system time. Voltage level: Voh>1,8V at 50 Ohm load
- Output Impedance: 25 to 30 Ohm (typ)

Event Marker input, BNC

External Reference Frequency Input/Output, BNC

The central pin of the RF antenna connector outputs +5 VDC to power LNA. The sourced current is 0.12A max.

Serial port (M12) bus power, +12 V DC, 250 mA max

TriPad interface: six external LED drivers, ON/OFF control and External Command inputs

Wi-Fi 5 GHz and 2.4GHz 802.11 a/b/g/n/ac

Bluetooth 5.1 dual-mode device that is optimized for low-power devices

WLAN/Bluetooth coexistence protocol support

User Interface

LED Indication	Status, Recording, Radio, Cellular, WiFi, Bluetooth
Buttons	On/Off button, Recording On/Off

Sensors

Support of meteorological MET3 sensors (Panasonic, Vaisala)

³ Factors like lack of line of sight, weather conditions, height, radiation pattern, gain, VSWR of transmitting and receiving antennas, modulation type, duty cycle, etc., may affect the radio communication range.

Sigma-3S

Environmental

Enclosure	aluminum extrusion, IP67
Color	Black and green
Operating Temperature	-40° F to 167° F(-40° C to +75° C) ⁴
Storage Temperature	-40° F to 185° F(-40° C to +85° C)
Humidity	100% condensing
Dimensions	8.34 x 4.29 (5.19 with brackets)x 2.44 inches (212 x 109 (132 with brackets)x 62 mm)
Weight	3.079 lbs (1.397 kg)
Shock	Shock complies with MIL-STD- 810H (method 514.8) Vibration complies with MIL-STD- 810H (method 516.8)

Data Features

- Up to 100 Hz update rate for real time position and raw data (code and carrier)
- 10 cm code phase and 1 mm carrier phase precision
- Hardware Viterbi decoder
- Hardware Reed-Solomon and LDPC decoders
- Spectrum data output
- In-band Interference Rejection
- Spoofing detection
- Jamming detection
- Advanced Multipath Reduction
- GLONASS .2mm Dynamic Calibration
- RAIM
- RTCM SC104 versions 2.x and 3.x Input/Output
- NMEA 0183 versions 2.x and 3.0 Output
- RINEX / BINEX data output
- Hatanaka, zip output
- Code Differential Rover/Base
- Real Time Postprocessed Kinematics (RTPK)
- Heading / Attitude Determination
- Geoid and Magnetic Variation models
- Different DATUMs support
- Output of grid coordinates
- In-built HTTP interface
- IEEE 1588 protocol support

Network Features

- The number and type of configurable servers:
 - TCP - 5 connections
 - TCPO - unlimited connections
 - UDP- unlimited (connectionless)
 - PTP - unlimited (connectionless)
 - NTP - unlimited (connectionless)
 - HTTP(S) - 2 connections
 - FTP - 1 connection
 - DHCP - unlimited connections
 - NTRIP caster - unlimited connections⁵
- The number and type of configurable clients:
 - TCP - 9 connections
 - NTRIP client - 9 connections
 - NTRIP server - 9 connections⁶
 - SISNET - 9 connections
 - DynDNS - 1 connection
 - DHCP - 1 connection
 - DNS - unlimited connections
 - FTP push - 1 connection
 - SFTP push - 1 connection

⁴Li-Ion batteries are the temperature limiting factor

⁵Integrated NTRIP caster supporting 5 mount points for sending RTCM 3.x data streams via NTRIP protocol (NTRIP 1.0 and NTRIP 2.0) to unlimited Clients simultaneously to allow real-time applications.

⁶Integrated NTRIP server for sending RTCM 3.x data streams via NTRIP protocol (NTRIP 1.0 and NTRIP 2.0) to at least 9 NTRIP casters.

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Options



For all modifications, the front panel interfaces:

TOP LINE:

- PWR (main)
- PWR 2 (secondary)
- USB
- Serial Port A
- Serial Port C
- Ethernet

BOTTOM LINE:

- Wi-Fi antenna
- Serial Port D / CAN / Power Out
- Bluetooth antenna
- GNSS antenna

OPTION A - REFERENCE STATION

Back panel: empty



OPTION B - GENERAL PURPOSE

Back panel:

- EVENT A
- 1PPS B
- 1PPS A
- EXT. FREQ. I/O



OPTION C - MOBILE APPLICATIONS

Back panel:

TOP LINE:

- Cellular
- UHF

BOTTOM LINE:

- EVENT A
- 1PPS B
- 1PPS A
- EXT. FREQ. I/O

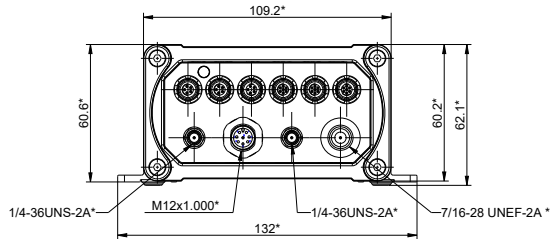


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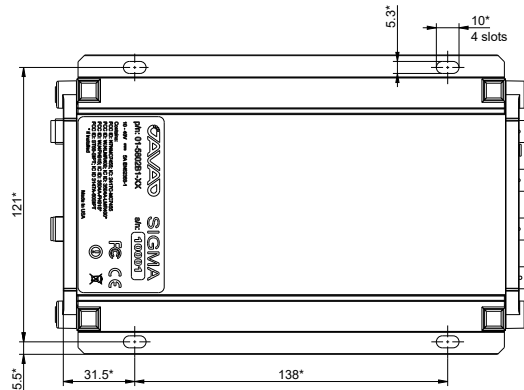
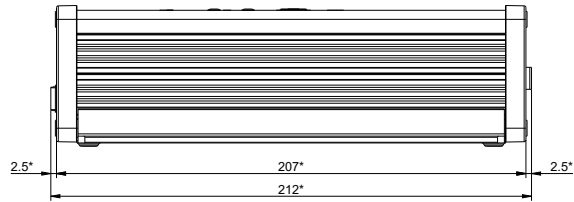
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Dimensions



All dimensions are in mm



Easy management with NetView&Modem

NetView&Modem is a free application allowing the user to easily control JAVAD GNSS Sigma-3S receivers, i.e. allowing efficiently managing receiver parameters and commands via a user friendly graphical interface.

Easy management with J-Mobile

For setting up the base and rover may be afforded using Javad Mobile Tools (J-Mobile) and your mobile device and either the iOS or Android. You can connect your Sigma-3S in field to the mobile device using WiFi connection internally implemented in your receiver.

Illustrations, descriptions and technical specifications are not binding and may change.

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