



GNSS RECEIVER

## SIGMA-3N



FOR TRE-3N

GPS L1/L2/L2C/L5, GALILEO E1/E5A/E5B/ALTBOC  
GLONASS L1/L2/L3, BEIDOU B1/B2

SIGMA-3N is a powerful receiver for high accuracy applications, such as reference stations and CORS. 864 GNSS channels of SIGMA-3N allow tracking all current and future satellite signals.

The SIGMA-3N receiver includes TriPad (two LEDs, ON/OFF and function button), GSM/CDMA2000 module, UHF/VHF modem, Bluetooth, Ethernet capability, up to two serial ports, up to two event markers and 1PPS timing strobes, and rechargeable batteries.

Two external power inputs secure the power system redundancy and eliminate system failure. The CAN interface in SIGMA-3N receiver is provided complete with all associated hardware and firmware, not just the CAN bus. The same is true with all the serial RS232/RS422 ports in our receiver.

In addition to timing strobe and event marker, the SIGMA-3N receiver includes the option of complete IRIG timing system.

# SIGMA-3N

## TRACKING FEATURES\*

Total 864 channels: all-in-view

GPS: C/A, L1C (P+D), P1, P2, L2C (L+M), L5(I+Q)

GLONASS: C/A, L2C, P1, P2, L3 (I+Q)

Galileo: E1 (B+C), E5A (I+Q), E5B (I+Q), AltBoc

BeiDou: B1, B1-2, B1C(P+D), B5A (I+Q), B2, B5B (I+Q)

QZSS: C/A, L1C (P+D), L2C (L+M),

L5 (I+Q), SAIF

SBAS\*\* L1, L5

IRNSS L5

In-Band Interference Rejection

Advanced Multipath Reduction

Fast acquisition channels

High accuracy velocity measurement

Almost unlimited altitude and velocity

## PERFORMANCE SPECIFICATIONS

Autonomous: < 2 m

Static, Fast Static Accuracy:

- Horizontal:  $0.3 \text{ cm} + 0.1 \text{ ppm} * \text{base\_line\_length}^{***}$
- Vertical:  $0.35 \text{ cm} + 0.4 \text{ ppm} * \text{base\_line\_length}$

Kinematic Accuracy:

- Horizontal:  $1 \text{ cm} + 1 \text{ ppm} * \text{base\_line\_length}$
- Vertical:  $1.5 \text{ cm} + 1 \text{ ppm} * \text{base\_line\_length}$

RTK (OTF) Accuracy:

- Horizontal:  $1 \text{ cm} + 1 \text{ ppm} * \text{base\_line\_length}$
- Vertical:  $1.5 \text{ cm} + 1 \text{ ppm} * \text{base\_line\_length}$

DGPS Accuracy:

- < 0.25 m post processing;
- < 0.5 m real-time

Real-time heading accuracy:

- $0.004/L$  [rad] RMS, where L is the antenna separation in [m]

Cold/Warm Start/ Reacquisition: < 35 seconds / < 5 seconds / < 1 second

## RADIO SPECIFICATION

Cellular module:

- 3.5G UMTS/HSPA Module Global (850/1900/2100) /North America (850/1900/1700-2100AWS) / Europe (900/2100)
- Internal GSM/GPRS/EDGE quad-band module, GPRS/EDGE Class 10
- Internal CDMA2000 dual band module 800/1900MHz

Internal Radio:

- UHF 360-420 MHz
- UHF 406-470 MHz
- UHF FH915
- VHF 138-174 MHz
- L-BAND/BEACON

\* For the full list of standard and optional features see [www.javad.com](http://www.javad.com)

\*\* US WAAS, European EGNOS, Russian SDCM, Indian GAGAN, Japanese MSAS, and similar future satellite systems

\*\*\* For good observation conditions and proper length of observation session

# SIGMA-3N

## DATA STORAGE

Up to 16 GB of onboard non-removable memory for data storage

## 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) 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 port M12, 8 pin

IRIG timecode output A134, A137, B124, B137

Two 1 PPS outputs, synchronized to GPS, GLONASS or UTC, BNC

- Active edge programmable. Typical voltage level 0 to 2 volts on 50 Ohm load.

Two Event Marker inputs, 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.

Two LEDs, two function keys (TriPad)

Two External Power ports

Bluetooth® V1.2 Class 2 supporting SPP Slave Profile

## POWER SPECIFICATION

Two external power inputs, 5 pin ODU

Two internal Li-Ion batteries (7.4 V, 5.8 Ah each) with internal charger

Operating Time up to 15 hours

Input Voltage +10 to +30 volts

## PHYSICAL & ENVIRONMENTAL

RF antenna connector: TNC female

Operation temperature -40° C to +65° C\*\*\*\*

Storage temperature -45° C to +85° C\*\*\*\*\*

Enclosure: aluminum extrusion, waterproof IP 67

Humidity: 100% condensing

Shock

- complies with MIL-STD- 810H (method 514.8)

Vibration

- complies with MIL-STD- 810H (method 516.8)

Dimensions: 5.2 x 2.4 x 7.48 inches (132x61x190mm)

Weight: 2.8 lbs (1.27 kg)

\*\*\*\* The operating temperature range of Li-Ion batteries is -30° C to +55° C

\*\*\*\*\* The storage temperature of Li-Ion batteries is -20° C to +45° C

# SIGMA-3N

## 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

IEEE 1588 protocol support for a Precision Clock Synchronization Protocol for Networked Measurement and Control Systems.

Spoofing detection

Spectrum data output

GLONASS .2mm Dynamic Calibration

Hardware Viterbi decoder

RTCM SC104 versions 2.x and 3.x Input/Output

NMEA 0183 versions 2.x and 3.0 Output

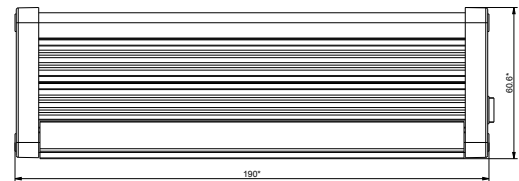
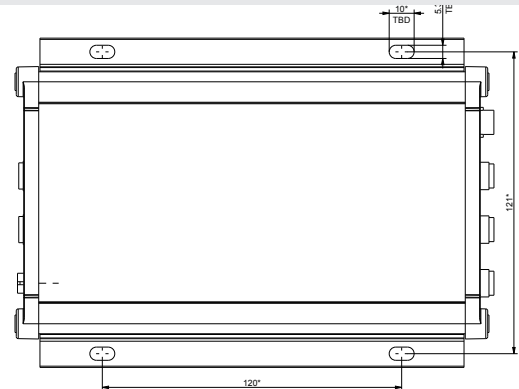
Code Differential Base/Rover

Geoid and Magnetic Variation models

RAIM

Different DATUMs support

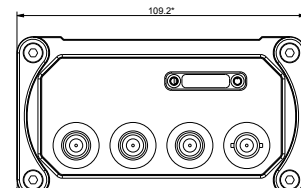
Output of grid coordinates



## EASY MANAGEMENT WITH NETVIEW&MODEM

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

NetView&Modem displays spectrum data captures and allows the user to interpret them.



\* All dimensions are in mm

## ROVER RTK MODE

The receiver could be able to operate as Rover RTK adapting its operative mode to the quality of the signal received, being able to select automatically its operative mode among Rover RTK, DGPS (EGNOS) or autonomous based on the corrections availability.



900 Rock Avenue  
San Jose  
CA 95131, USA

+1(408)770-1770  
sales@javad.com  
www.javad.com