

# JAVAD

GNSS RECEIVER

## DELTA-3S



For the first time in the GNSS history, we offer a receiver with up to 200 Hz RTK.

The DELTA-3S receiver can track and decode the QZSS L6 (both L61 and L62) signal messages. 874 GNSS channels of this receiver allow tracking all current and future satellite signals. We offer highly stable digital filters (band characteristics do not change with age, input voltages, or temperature), improved GLONASS inter-channel bias performance (due to our flat digital filter shape), excellent new multipath rejection technique, the best. The embedded calibrator measures phase and code delays of each signal of each band. External calibration is not required.

DELTA-3S is a powerful and reliable receiver for high-precision navigation systems, including high dynamics systems, for machine and traffic control, and high-precision surveying and geodynamics and aerogeophysics applications.

DELTA-3S 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 scientific station collecting information for special studies, such as ionosphere monitoring and the like.

## DELTA-3S

### Options



- For all modifications, the front panel interfaces:  
PWR  
USB  
Serial Port A  
Serial Port C  
Ethernet

#### OPTION A - REFERENCE STATION

- Back panel: GNSS Antenna



#### OPTION B - GENERAL PURPOSE

- Back panel:  
GNSS Antenna  
Event  
1PPS  
Ext. Frequency I/O



#### OPTION C - MOBILE APPLICATIONS

- Back panel:  
GNSS Antenna  
Event  
1PPS  
Serial Port D / CAN



## DELTA-3S

### Main Characteristics

#### TRACKING FEATURES

- 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)
- Galileo 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
- IRNSS L5, S
- L-band 1525-1560 MHz
- SBAS<sup>1</sup> L1, L5(P+D)
- In-Band Interference Rejection
- Spoofing detection
- Advanced Multipath Reduction
- Fast acquisition channels
- High accuracy velocity measurement

#### PERFORMANCE SPECIFICATIONS

- Autonomous: < 2 m
- Static, Fast Static Accuracy:
  - Horizontal:  $0.3 \text{ cm} + 0.1 \text{ ppm} * \text{base\_line\_length}^2$
  - 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:
  - $0.004/L \text{ [rad] RMS}$ , where L is the antenna separation in [m]
- Cold/Warm Start/ Reacquisition:
  - < 35 seconds / < 5 seconds / < 1 second

#### DATA STORAGE

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

- High-speed configurable RS232/RS422 serial port (up to 460.8 Kbps) and CAN 2.0 M12, 8 pins
- High speed USB 2.0 dual-role port (device or host), 5 pin ODU
- Full-duplex 10BASE-T/100BASE-TX Ethernet port
- CAN 2.0 port
- IRIG timecode output A134, A137, B124, B137, BNC
- 1 PPS output, BNC
  - Synchronized to UTC or any selected satellite system time.
  - Voltage level:  $V_{oh} > 1.8V$  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
- Two LEDs, two function keys (TriPad)

#### POWER SPECIFICATION

- External power input, 5 pins ODU
- Power consumption: 4.5 Watt (typ.)
- Input voltage: +4.5 to +35 Volts

#### PHYSICAL & ENVIRONMENTAL

- Temperature:
  - Operating: -40 °F to 176 °F (-40°C to +80°C)
  - Storage: -40 °F to 185 °F (-40°C to +85°C)
- Humidity: 95%
- High shock and vibration resistance
- Dimensions:
  - 4.3x1.4x5.6/max 6.3 inches (109x35x141/ max 160 mm) with connectors
- Weight: 0.92 lbs (0.42 kg)

#### INPUT/OUTPUT

- High-speed RS232 serial ports (up to 460.8 Kbps) 7 pins ODU
- High speed configurable RS232/RS422 serial port (up to 460.8 Kbps), 7 pin ODU

<sup>1</sup> US WAAS, European EGNOS, Russian SDCM, Indian GAGAN, Japanese MSAS, and similar future satellite systems

<sup>2</sup> For good observation conditions and proper length of observation session

## DELTA-3S

### Data Features

- Up to 200 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

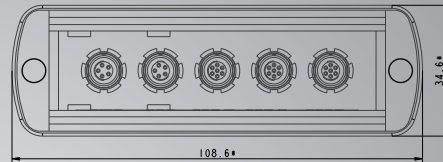
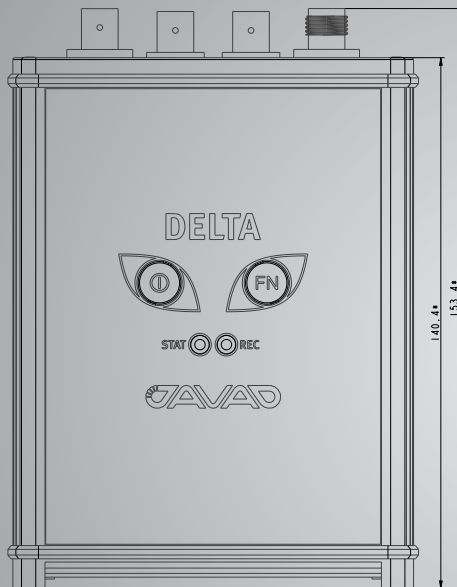
- The number and type of configurable servers:
  - TCP - 5 connections
  - TCPO - unlimited connections
  - UDP- unlimited (connectionless)
  - PTP - unlimited (connectionless)
  - NTP - unlimited (connectionless)
  - HTTP(S) - 2 connections
  - FTP - 1 connection
  - DHCP - unlimited connections
  - NTRIP caster - unlimited connections<sup>3</sup>
- The number and type of configurable clients:
  - TCP - 9 connections
  - NTRIP client - 9 connections
  - NTRIP server - 9 connections<sup>4</sup>
  - SISNET - 9 connections
  - DynDNS - 1 connection
  - DHCP - 1 connection
  - DNS - unlimited connections
  - FTP push - 1 connection
  - SFTP push - 1 connection

<sup>3</sup> Integrated 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.

<sup>4</sup> Integrated 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.

## DELTA-3S

### Dimensions



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

