



# SIGMAD

for Duo-G2, Duo-G2D, Duo-G3D

We offer the multi-frequency satellite-based two-antenna system DELTAD in a small nice-looking durable watertight box. The system is based on our TRIUMPH Technology implemented in the TRIUMPH Chip and includes 216 channels of multi-frequency GPS, Galileo, and GLONASS. The dual-frequency code and carrier phase data from two antennas are processed to determine the heading angle and the RTK positions of the two antennas up to 50 times per second. DELTAD is a powerful and reliable receiver for high-precision navigation systems to be used in various applications, such as machine and traffic control, precision agriculture, etc.

SIGMAD receiver also includes TriPad (two LEDs, ON/OFF and function button), GSM/CDMA2000 module, UHF/VHF modem, and batteries. In addition, the receiver comes with large amount of flash for data storage. Two external power inputs secure the power system redundancy and eliminate system failure. The on-board power supply on SigmaQ receiver accepts any voltage from +10 to +30 volts and delivers clean filtered voltage where needed.



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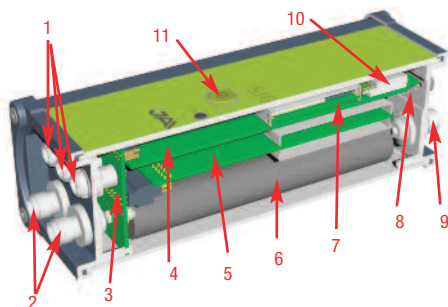
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## Standard Configuration

- GPS L1 (G2)
- GPS L1/L2/L2C (G2D and G3D)
- GLONASS L1/L2 (G3D only)
- Update rate 1 Hz
- RAIM
- TriPad interface
- RS232 serial port (460.8 kbps)
- External GNSS Antenna TNC Female connector
- Li-Ion Battery pack

## Optional Features

- Galileo E1
- QZSS
- Beidou B1
- WAAS/EGNOS/MSAS (SBAS)
- Update rate 5Hz, 10Hz, 20Hz, 50Hz & 100Hz
- Heading rate 1 Hz, 5Hz, 10Hz, 20Hz, 50Hz
- Data recording up to 2048MB
- Multi-Base Code Differential Rover
- Code Differential Base
- Advanced Multipath Reduction
- Advanced Multipath Reduction
- Two event markers
- Two 1 PPS timing strobes
- 1 PPS level converter
- CAN port
- External Reference Frequency Input/Output
- External Reference Output Frequency converter
- IEEE1588 Master Clock (G3TAJT only)
- 2 high-speed RS232 serial ports
- High-speed RS232/RS422 serial port
- USB port
- Ethernet
- Bluetooth
- Internal 3.5G UMTS/HSPA Module
- Internal UHF Modem
- Internal GSM/GPRS Module
- Internal CDMA2000 Module
- WAAS/EGNOS/MSAS (SBAS)
- 2x External Power Inputs
- Mounting Bracket



1. Communication and Power Ports
2. External GNSS Antenna Connectors
3. GNSS Interconnect Board
4. GNSS Power and Communication Board with on-board SIM/UIM -card
5. GNSS Receiver with on-board Memory
6. Rechargeable Li-Ion Battery Pack
7. UHF/VHF Modem
8. SIM/UIM Card Holder
9. External UHF/VHF, GSM/CDMA2000, Bluetooth Antenna Connectors
10. 3.5G/GSM/CDMA2000 Modem
11. On/Off Button

Specifications are subject to change without notice



## JAVAD GNSD

[www.javad.com](http://www.javad.com)

Rev.2.3 July 9, 2013

Features/Receiver Type	SigmaD		
	G2	G2D	G3D
Channels	216		
GPS C/A, P1	2	2	2
GPS L2C (L+M), P2	-	2	2
Galileo E1 (B+C)	2	2	2
GLONASS C/A, L2C, P1, P2	-	-	2
QZSS C/A, L1 (I+Q), SAIF	2	2	2
QZSS L2C (L+M)	-	2	2
Beidou B1	√	√	√
SBAS L1	√	√	√
Size, mm (WxHxD)	W: 132 mm x H: 61 mm x D: 190 mm		
Weight, g	1290		1310
Autonomous Accuracy	<2m		
Static, Fast Static Accuracy	Horizontal: 0.3 cm + 0.1 ppm * base_line_length* Vertical: 0.35 cm + 0.4 ppm * base_line_length*		
Kinematic Accuracy	Horizontal: 1 cm + 1 ppm * base_line_length Vertical: 1.5 cm + 1.5 ppm * base_line_length		
RTK (OTF) Accuracy	Horizontal: 1 cm + 1 ppm * base_line_length Vertical: 1.5 cm + 1.5 ppm * base_line_length		
Real-time heading accuracy	~ 0.004/L [rad] RMS**		
DGPS Accuracy	< 0.25 m Post Processing, < 0.5 m Real Time		
Pos/ fix update rate	up to 50 Hz RTK+heading		
Cold start, warm start	<35 s, <5 s		
Reacquisition	<1 s		
GNSS Antenna Connector	2		
50 Ohm TNC, +5 VDC (100 mA) to power LNA	2		
RS232 up to 460.8 kbps	3		
RS232/RS422 up to 460.8 kbps	1		
USB (480 Mbps)	1		
Full-duplex 10BASE-T/100BASE-TX Ethernet port	1		
3.5G UMTS/HSPA Module	Global (850/1900/2100) / North America (850/1900/1700-2100AWS) / Europe (900/2100)		
GSM/GPRS Module	Internal GSM/GPRS quad-band module, GPRS Class 10		
CDMA 2000 Module	Internal CDMA2000 dual band module 800/1900MHz		
UHF Radio Modem	Internal 360-470 MHz radio transceiver, up to 38.4 kbps		
VHF Radio Modem	Internal 138-174 MHz radio transceiver, up to 38.4 kbps		
Base Power Output	1 Watt		
CAN 2.0	1		
IRIG	1		
Event Marker	2		
1PPS	2		
Battery	Two internal Li-Ion batteries (7.4 V, 5.8 Ah each)		
External power input	2, 1 - primary, 1 - secondary port		
Input Voltage	+10 to +30 volts		
TriPad	Two buttons, two LEDs		
On-board flash	2048 MB		
Enclosure	Aluminum extrusion, waterproof IP67		
Operation temperature	-40° C to +75° C***		
Storage temperature	-45° C to +85° C****		
GNSS Antenna	External		
Real-time Data Input/Output	JPS, RTCM SC104 v. 2.x and 3.x, CMR		
Real-time Data Output	NMEA 0183 v. 2.x and 3.0. BINEX		

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