



# TRIUMPH-1

Based on the TRIUMPH Chip, TRIUMPH-1 is a fully integrated package ready for your demanding jobs, offering precise and automatic performance beyond anything that you have experienced so far.

An elegant, rugged, light, and hermetically sealed box accommodates all GNSS and modem electronics, antennas, and up to 18 hours of rechargeable batteries and its sophisticated power management system. The close proximity of our batteries with the electronic section helps the batteries to absorb heat and function better in cold weathers. The batteries can be charged with any power supply from 10 volts to 30 volts, which includes car, ship and airplane batteries.

All GNSS, UHF, 3.5G UMTS/HSPA/GSM/CDMA2000, and Bluetooth/WiFi antennas are conveniently hidden and protected. An external antenna can also be connected to bypass the internal GNSS antenna. There are two SIM/UIM cards inside the box, one of them can be easily reached and changed via a small sealed door.

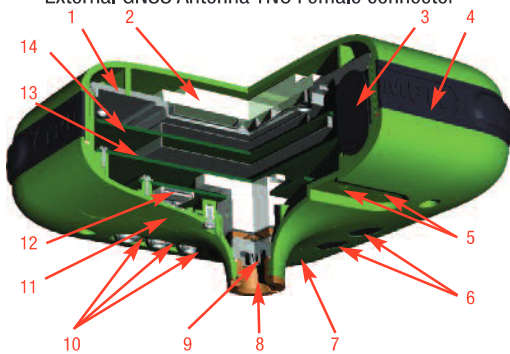
# TRIUMPH-1

## Standard Configuration

- GPS L1/L2/L2C/L5
- GLONASS L1/L2
- Update Rate 5Hz
- RTK Rate 5Hz
- Memory 256 MB
- RAIM
- Code Differential Base/Rover
- Advanced Multipath Reduction
- MinPad Interface
- Two RS232 Serial Ports (460.8 kbps)
- USB port
- Internal GNSS antenna
- Bluetooth® Interface
- Wi-Fi (IEEE 802.11b/g)
- KFK WAAS/EGNOS (SBAS)
- Rechargeable Li-Ion Battery

## Optional Feature

- Galileo E1/E5A
- Galileo E5B\*
- GLONASS L3\*
- QSZZ
- Beidou B1\*
- Beidou B2\*
- Update Rate 10Hz, 20Hz, 50Hz & 100Hz
- RTK Rate 10Hz, 20Hz, 50Hz & 100Hz
- Data Recording up to 2048 MB
- Heading Determination
- GLONASS .2mm Dynamic Calibration
- In-Band Interference Rejection
- JAVAD ArcPad Extension
- 1 PPS timing strobe
- Event Marker
- Internal 3.5G UMTS/HSPA Module
- Internal GSM/GPRS/EDGE Module
- Internal CDMA2000 Module
- Internal UHF Modem
- Ethernet
- External GNSS Antenna TNC Female connector



1. Ground Plane
2. Internal GNSS Antenna
3. Rechargeable Li-Ion Battery Pack
4. Guard Bumper
5. 1PPS and Event Marker Connectors (optional)
6. On/Off and Control Buttons and LEDs
7. Bluetooth / WiFi Antenna
8. 5/8-11" Mounting Thread
9. UHF / GSM / CDMA2000 Antenna Connector
10. Communication and Power Ports
11. SIM/UIM Card Door
12. User Accessible SIM/UIM Card
13. GNSS Receiver and Power Board with on-board Memory
14. GNSS RF and Communication Board with on-board SIM/UIM Card

## Description

Total 216 channels: all-in-view (GPS L1/L2/L5, Galileo E1/E5A/E5B, GLONASS L1/L2/L5, QZSS L1/L2/L5, Beidou B1/B2, SBAS L1/L5) integrated receiver, rugged plastic and magnesium housing complete with MinPad interface

## Tracking Specification

Signals Tracked

GPS C/A, P1, P2, L2C (L+M), L5 (I+Q)  
Galileo E1 (B+C), E5A (I+Q), E5B (I+Q), AltBoc  
GLONASS C/A, L2C, P1, P2, L3 (I+Q)  
QZSS C/A, L1C(I+Q), L2C (L+M), L5 (I+Q), SAIF  
Beidou B1, B2  
SBAS L1, L5

## Performance Specifications

Autonomous	<2 m
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 ppm * base_line_length
RTK (OTF) Accuracy	Horizontal: 1 cm + 1 ppm * base_line_length Vertical: 1.5 cm + 1 ppm * base_line_length
DGPS Accuracy	< 0.25 m Post Processing < 0.5 m Real Time
Cold Start	<35 seconds
Warm Start	<5 seconds
Reacquisition	<1 second

## Power Specification

Battery	Two internal Li-Ion batteries (7.4 V, 5.8 Ah each) with internal charger
Operation Time	Up to 18 hours
External Power Input	+10 to +30 volts

## GNSS Antenna Specifications

GNSS Antenna	Integrated
Antenna Type	Microstrip (Zero Centered)
Ground Plane	Antenna on a flat ground plane

## Radio Specifications

3.5G UMTS/HSPA Module	Global (850/1900/2100) /North America (850/1900/1700-2100AWS) / Europe (900/2100)
GSM/GPRS/EDGE Module	Internal GSM/GPRS/EDGE quad-band module, GPRS/EDGE Class 10
CDMA 2000 Module	Internal CDMA2000 dual band module 800/1900MHz
UHF Radio Modem	Internal 360-470MHz radio transceiver, up to 38.4kbps
Base Power Output	1 Watt

## I/O

Communication Ports	2x serial (RS232) up to 460.8 kbps High speed USB 2.0 device port (480 Mbps) Full-duplex 10BASE-T/100BASE-TX Ethernet port Wi-Fi (IEEE 802.11b/g) Bluetooth V2.0+EDR Class 2 supporting SPP Slave and Master Profiles
Other I/O Signals	1 PPS synchronized Event Marker
Status Indicator	Six LEDs, two function keys (MinPad)

## Memory & Recording

Internal Memory	Up to 2048MB of onboard non-removable memory for data storage
Raw Data Recording	Up to 100 times per second (100Hz)
Data Type	Code and Carrier from GPS L1/L2, Galileo E1/E5A, GLONASS L1/L2

## Real Time Data

Input/Output	JPS, RTCM SC104 v. 2.x and 3.x, CMR
Output	NMEA 0183 v. 2.x and 3.0, BINEX

## Environmental Specifications

Enclosure	Molded magnesium alloy and plastic, waterproof IP67
Operating Temperature	-40° C to +60° C ***
Storage Temperature	-45° C to +85° C ***
Humidity	100% condensing
Shock	Survives a 2 m drop onto hard surface
Dimensions	W:178 mm x H:96 mm x D:178 mm
Weight	1700 g

Specifications are subject to change without notice



**JAVAD GNSS**  
[www.javad.com](http://www.javad.com)

Rev.2.4 July 9, 2013

\*Board version 10 or newer  
\*\* For good observation conditions and proper length of observation session  
\*\*\* The operating temperature range of Li-Ion batteries is -30° C to +55°  
The storage temperature of Li-Ion batteries is -20° C to +45°