

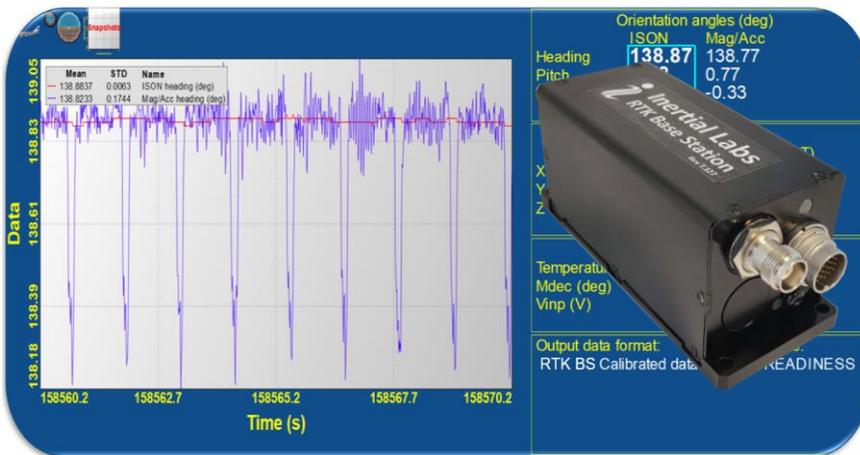
RTK & DGPS BASE STATION

- Affordable price
- Up to 50 km RTK baseline
- Supports Lefebure™ NTRIP Caster
- 8 GB / 64 GB embedded data logger
- Configurable data rate (1, 10, 20, 50 Hz)
- GPS, GLONASS, GALILEO, QZSS, & BEIDOU
- Rugged and environmentally sealed IP67 design
- 372 supported channels with fast acquisition times
- Full compatibility with all **Inertial Labs** GPS-Aided **INS**

Datasheet Revision 1.0



The **Inertial Labs RTK & GPS Base Station** is a supported GPS, GLONASS, GALILEO, QZSS, BEIDOU and L-Band Base Continuously Operating Reference Station, that determines accurate position for any application needing a reference station. When the device is fully operational, it uses its precise positioning system to monitor differences in its programmed position relative to position input that is being received from the GNSS. These differences are used to feed RTCM correction data to units nearby. With a long-range RTK baseline of up to 50 km with fast acquisition times you'll be able to expand your research area farther than ever before. Whether inside an office space, or set up outside, this IP67 rated device is designed to perform in versatile environments with immaculate performance. With 372 channels ready to be utilized at any point and the capability to be connected to up to 60 satellites at once (L1/L2), you can be rest assured that a consistent connection is something we value.

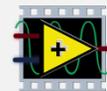


The Inertial Labs **RTK & DGPS Base Station** utilizes an advanced single antenna GNSS multi-constellation and multi-frequency DGPS and RTK with carrier phase receiver to deliver you precise location data wherever your unit is located. The device also has the ability to simultaneously track all accepted satellite signals which makes it even more reliable. The embedded internal datalogger means that you can remote access internal memory over your IP without having to relocate or even power off your unit.

KEY FEATURES AND FUNCTIONALITY

- Affordable price
- Fast acquisition times
- 372 supported channels
- Supports Lefebure™ NTRIP Caster
- 8 GB / 64 GB embedded data logger
- Long-range RTK baselines of up to 50 km
- Compatible with all Inertial Labs GPS-Aided INS devices
- Supports: ROS, LabVIEW, Waypoint Inertial Explorer, QINSy
- Multiple output interface options: RS-232, RS422, Ethernet, CAN
- Single antenna GNSS multi-frequency RTK with carrier phase receiver
- GPS, GLONASS, GALILEO, BEIDOU, SBAS, DGPS, RTK supported signals
- Data rate configurable; 1 Hz (standard), 10 or 20 Hz (optional), 50 Hz (modified firmware)
- Differential options to include: SBAS, Autonomous, External RTCM, RTK, L-Band (Atlas) DGPS
- Time output configurable to include: PPS, CMOS, active high, rising edge sync, 10 kΩ, 10 pF load
- Full temperature calibration, environmentally sealed (IP67), compact design, MIL-STD-810G/DO-160E

WAYPOINT
PRODUCTS GROUP



LabVIEW

ROS



Base Station Communication

For precise measurements using Real Time Kinematic (RTK) positioning, a base station is a vital necessity. For applications requiring up to 1 cm + 1 ppm accuracy, the need for a base station increases dramatically. The base station is responsible for measuring local errors and transmitting these errors to a corresponding field unit for more accurate position calculations. Many field applications require a base station such as surveying, point cloud development, precision farming, and autonomous navigation. A functional diagram of RTK communications can be seen below.

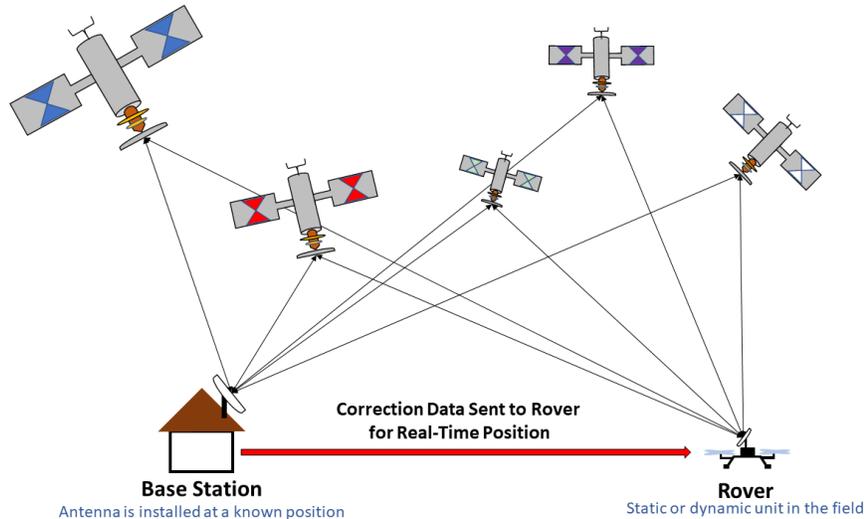


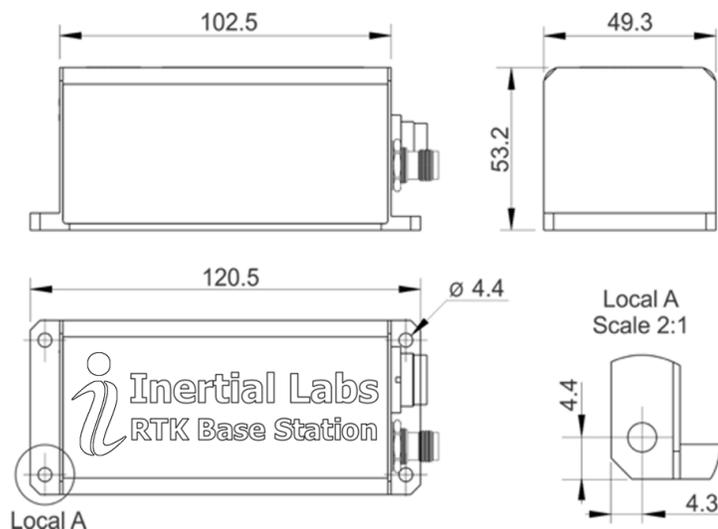
Fig. RTK Communication

To transmit correction data from the Base Station to your intended device, a TCP server or an NTRIP (Network Transport for RTCM via Internet Protocol) server may be set up on the host computer. To facilitate a quick setup, the Lefebure™ NTRIP Caster program may be used as a server. This software is available to use on multiple platforms such as a cell phone as well as a PC based system.

Inertial Labs Base Station Mechanical Interface Drawing

Notes:

1. All dimensions are in millimeters.
2. All dimensions within this drawing are subject to change without notice. Customers should obtain final drawings before designing any interface hardware.
3. Interface connector type: Binder. Male receptacle, shielded, rear-mounting
4. GNSS antenna connector type: TNC - Female



Inertial Labs RTK & DGPS Base Station Specifications

	Parameter	Units	Inertial Labs Base Station	
GENERAL	Output signals		<ul style="list-style-type: none"> Positions, PPS Timing: 1PPS, CMOS, active high, rising edge sync, 10 kΩ, 10 pF load 	
	Input signals		<ul style="list-style-type: none"> Event Marker: CMOS, active low, falling edge sync, 10 kΩ, 10 pF load 	
	Main features		<ul style="list-style-type: none"> Base Station; Ideal for reference unit; GNSS multi-frequency RTK with carrier phase; compatible with Lefebure™ NTRIP Caster 	
	Available colors of enclosure		Black, Desert tan or Green	
	Baud Rates		4800 - 115200	
	Data rate	Hz	Up to 200	
	Embedded Internal Data Logger		8 GB, 64 GB (optional)	
	Start-up time	sec	<1	
Corrections		RTCM Rev3		
GNSS		Units		
GNSS	Number of GNSS Antennas		Single	
	Supported navigation signals		GPS L1CA/L1P/L1C/L2P/L2C/L5; GLONASS G1/G2, P1/P2; BeiDou, B1/B2 (B3 separate variant without L5); GALILEO E1BC/E5a/E5b; QZSS L1CA/L2C/L5/L1C	
	Channel configuration		372 Channels	
	RTK baseline range	km	Up to 50	
	GNSS Positions data rate	Hz	1 (standard), 10 or 20 (optional), 50 (with firmware upgrade)	
	GNSS Measurements (raw) data rate	Hz	1 (standard), 10 or 20 (optional), 50 (with firmware upgrade)	
	Initialization time	Sec	<60 (cold start), <30 (warm start), <10 (hot start)	
	Time accuracy (clock drift) ⁽¹⁾	nano sec	20	
	Differential Options		SBAS, Autonomous, External RTCM, RTK, L-band (Atlas) DGPS	
	Channels	MHz	1525 - 1560	
	Sensitivity	dBm	-140	
Reacquisition Time:	sec	15 (typical)		
Environment		Units		
General	Operating temperature	deg C	-40 to +75	
	Storage temperature	deg C	-50 to +85	
	MTBF (G _M @ +65degC)	hours	100,000	
	Shock and Vibration		MIL-STD-810G	
	EMC/EMI		MIL-STD-461	
	Electrical		Units	
	Supply voltage	V DC	9 to 36	
	Power consumption	Watts	1	
	Output Interface (options)		RS-232, RS-422, Ethernet, CAN	
	Output data format		Binary ⁽²⁾ , NMEA 0183 ASCII characters	
Physical		Units		
Size	mm	120 x 50 x 53		
Weight	gram	220		

⁽¹⁾ Depends on multipath environment, number of satellites in view, satellite geometry and ionospheric activity; ⁽²⁾ Hemisphere GNSS proprietary;

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