TALO-F1200GU Series

NeuronEDGE Time Synchronized High Accuracy Inertial Navigation System

Preliminary



Features:

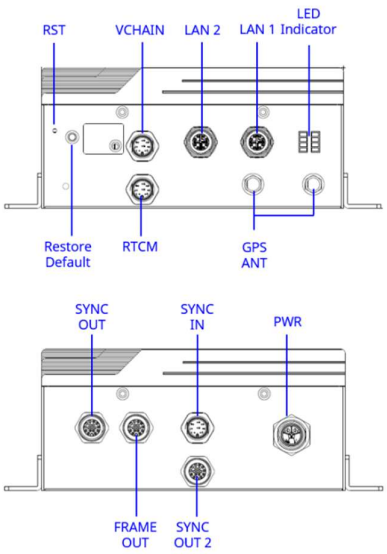
- Powered by Xilinx Zynq™ UltraScale+™ MPSoC featuring multiple processing engines for deterministic, real-time performance.
- Ultra-low-power GNSS rover receiver with AIM+ technology, driven by the Septentrio m3 pro
- High-reliability 9-Axis IMU with advanced EKF algorithm, powered by Xsens MTi-670
- Ultra-low latency and drift-free sensor time synchronization for distributed robotic systems
- Dual GPS support enables robot heading estimation and centimeter-level position accuracy
- RTCM radio input for RTK base station and rover communication
- Multi-channel PPS with Time-of-Day (ToD) output and frame sync for diverse sensor nodes
- 1x Gigabit Ethernet with IEEE 1588 PTP/gPTP capability, M12 X-coded connector
- Allow external GNSS system input for synchronization function
- Support a wide range of power inputs for compatibility with power sources

Specifications

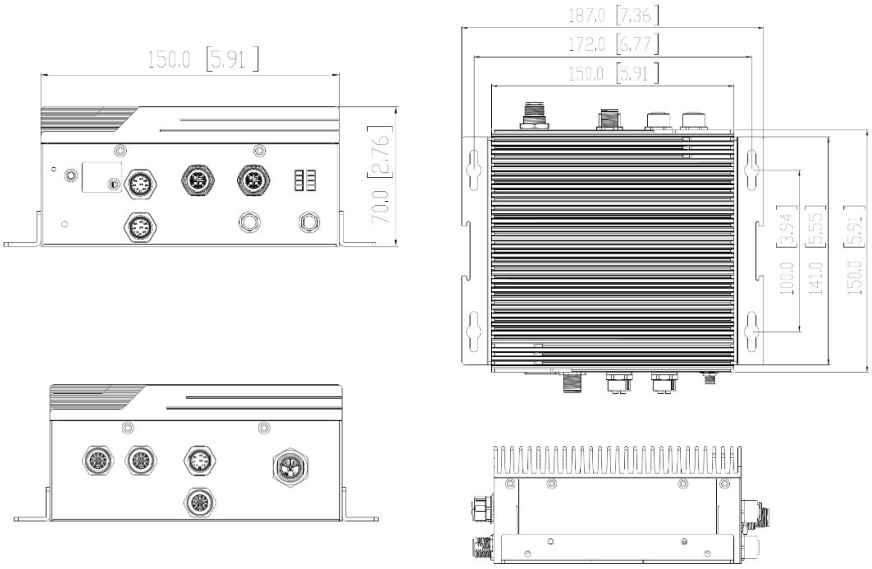
System	
Processor	Xilinx Zynq™ UltraScale+™ MPSoC
OS	Real-time OS, Yocto Middleware ROS 2 Humble
I/O Interface	
SYNC IN	One-channel external GNSS input, M12 A-coded 8-pin connector
SYNC OUT	5x time synchronization of PPS and ToD data outputs
SYNC OUT 2	3x time synchronization of PPS and ToD data outputs 1x CANbus output 1x IMU data output for external sensor fusion
FRAME OUT	4x 3.3VDC trigger pulse outputs 4x 1.8VDC trigger pulse outputs
VCHAIN	2x Daisy chain channel for cascading time synchronization functions
RTCM	1x RTCM radio input for RTK rover communication
Antenna	2x GPS antennas
RST	Reset Button
Restore Default	Restore to the factory default button
Ethernet	
LAN 1	10/100/1000Base-T Gigabit Ethernet with IEEE 1588 PTP/gPTP master, compliant with IEEE 802.3AS
LAN 2	10/100/1000Base-T Gigabit Ethernet with M12 X-coded
GPS – Septentrio AsteRx-m3 Pro	
GNSS Signals	GPS: L1C/A, L1 C, L2C, L2 P(Y), L5 GLONASS: L1 C/A, L2 C/A, L3, L2P BeiDou: B1I, B1C, B2a, B2b, B2I, B3I Galileo: E1, E5a, E5b QZSS: L1 C/A, L1 C/B, L2C, L5 NavIC: L5 SBAS: EGNOS, WAAS, GAGAN, MASA, SDCM
Septentrio Patented	**AIM+** industry-leading anti-jamming, anti-spoofing inference monitoring & mitigation technology **IONO+** advanced scintillation mitigation **APME+** a posteriori multipath estimator for code and phase multipath mitigation **LOCK+** superior tracking robustness under heavy mechanical shocks or vibrations **RAIM+** (Receiver Autonomous Integrity Monitoring)
Formats	NMEA 0183, v3.01, v4.0

RTK Performance	Horizontal accuracy: 0.6cm + 0.5 ppm Vertical accuracy: 1cm + 1 ppm Initialization: 7 s
GNSS attitude accuracy	Antenna separation / Heading / Pitch/Roll 1m / 0.15° / 0.23° 5m / 0.03° / 0.05°
Position accuracy	Horizontal / Vertical Standalone: 1.2m / 1.9m SBAS: 0.6m / 0.8m DGNSS: 0.4m / 0.7m
Time to first fix	Cold start < 45 s Warm start < 20 s Re-acquisition avg. 1 s
IMU – MTI-670	
Sensor fusion performance	Roll, Pitch: 0.2 deg RMS Yaw/Heading: 0.8 deg RMS Velocity: 0.05m/s RMS
Clock and Frequency	Clock drift: 1 ppm Output frequency: Up to 2000 Hz
Power	
Power Input	12 to 55V DC
Mechanical	
Dimensions (W x L x H)	TALO-F1100: 150 x 150 x 55 mm (5.9' x 5.9' x 2.16') TALO-F1200/1200GU: 150 x 150 x 70 mm (5.9' x 5.9' x 2.75')
Weight	TALO-F1100: 1.6KG (3.51 lb) TALO-F1200: 1.7KG (3.74 lb) TALO-F1200GU: 1.8KG (3.96 lb)
Mounting	DIN-Rail, Wall-mount
Environment	
Operating Temperature	-20℃ to 75℃, Fanless
Storage Temperature	-40℃ to 85℃
Humidity	5% to 95% Humidity, Non-condensing
Relative Humidity	95% @ 75℃
Shock	Operating, MIL-STD-810H, Method 516.8, Procedure I
Vibration	Operating, MIL-STD-810H, Method 514.8, Procedure I, Category 4
EMC	FCC, CE

I/O Interface



Dimensions



Ordering Information

Model Name	Platform	LAN	LAN (IEEE1588)	Sync IN	FRAME OUT	SYNC OUT	RTCM	UART	GPS	IMU
TALO-F1000	Xilinx Zynq™ UltraScale+™ MPSoC	1	1	1	8	5				
TALO-F1200	Xilinx Zynq™ UltraScale+™ MPSoC	1	1	1	8	8	1	1		
TALO-1200GU	Xilinx Zynq™ UltraScale+™ MPSoC + Xsens MTi-670 + Septentrio m3 Pro	1	1	1	8	8	1	1	1	1

Accessories

Others

DC-IN Cable	DC-IN Cable, 200cm
VCHAIN Cable	M12 VCHAIN Cable, 200cm
RTCM Cable Kit	RTCM Radio input Cable, 200cm
SYNC IN Cable kit	External GNSS input cable, 200cm
SYNC OUT Cable Kit	SYNC OUT Cable, 200cm
SYNC OUT 2 Cable Kit	SYNC OUT Cable, 200cm
FRAME OUT Cable Kit	FRAME OUT Cable, 200cm