

PENTAX

Positioning Systems

Precision Satellite Surveying
with extended measurement
support functions

Series

GX2

GPS | GLONASS | BEIDOU | SBAS | GALILEO

Made in Japan



GX2 Models

- + **GX2-A: with AR stakeout function**
- + **GX2-L: with AR stakeout & Laser measurement functions**
- + **GX2-C: with AR stakeout & Photogrammetry functions**

* Optional data collection software PTS3.0 is necessary to utilize these extended functions.

TI Asahi Co.,Ltd
Focusing on true performance

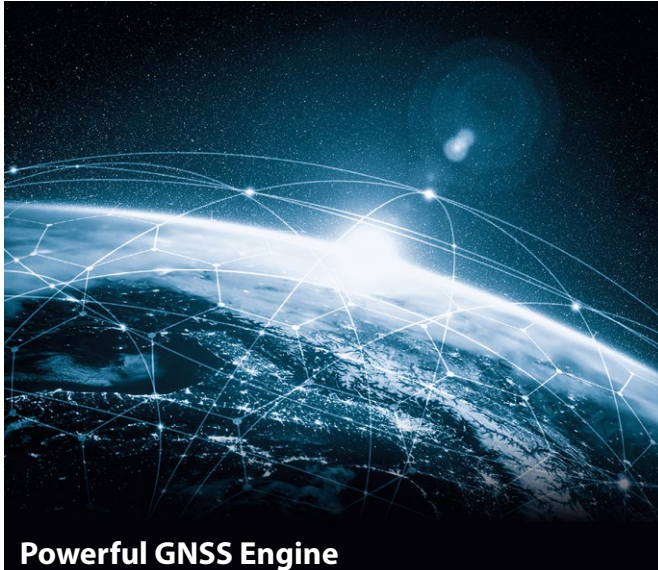
Positioning Systems Series **GX2**



Characteristics

The GX2 is a portable, multi-functional GNSS receiver featuring a high-precision positioning module that tracks satellite signals from all GNSS constellation systems and frequency bands. It is equipped with Bluetooth, WiFi, 4G full network access, and a built-in EX and RX data transmission radio that allows it to function as both a Rover and Base station. The device supports a hot-swap dual battery system for seamless battery replacement without shutting down the receiver, and includes a high-precision IMU for quick RTK fixes.

Designed for maximum efficiency and performance of surveying work, the GX2 boasts a robust, lightweight housing suitable for harsh outdoor environments. It also features a camera that enables visual guidance on the controller during stakeout operations. GX2 is ideal for surveyors who demand both speed and accuracy in their work, ensuring ease and reliability in challenging conditions.



Powerful GNSS Engine

The GX2, equipped with a powerful multi-frequency GNSS engine, covers all positioning satellite systems such as GPS, GLONASS, BeiDou, and Galileo. It is suitable for surveying tasks that require stable, fast, and accurate measurement results in any location.



IP68 waterproof and dustproof

All the electronic components are enclosed in a lightweight yet robust magnesium alloy housing with IP68 waterproof and dust-proof capabilities. This ensures stable operation in harsh weather or dusty environments.



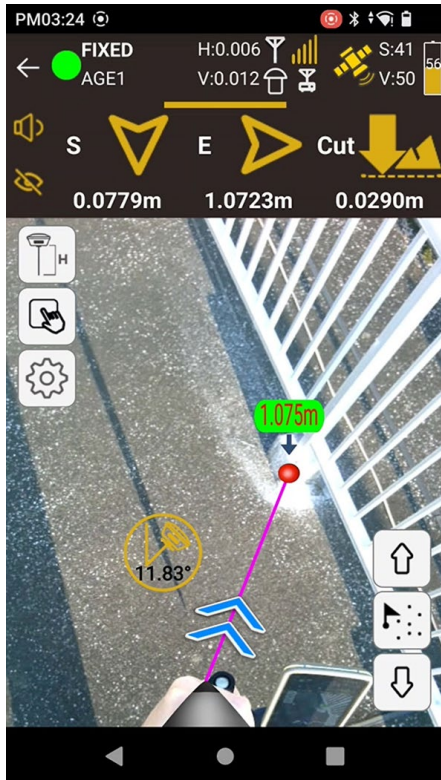
Tilt compensation

Automatic tilt compensation within a range of $\pm 60^\circ$, eliminating the need to keep the receiver vertical. This reduces operational steps, improves job flexibility, and adapts to rugged terrain.



Large LED display

The large, clear color LED display allows operator to easily see the real-time status and operation of the equipment at a glance.



AR stakeout

All models of the GX2 can capture images of the ground directly below using a high-resolution camera mounted on the bottom of the receiver. The captured images are reflected in real-time on the controller's software, providing visual guidance for stakeout tasks.

Optional Software PTS3.0 is required.



Dual hot-swap battery system

The GX supports a hot-swapping dual lithium battery system, enabling over 20 hours of uninterrupted continuous operation. This makes it especially suitable for long-term outdoor surveying work.

Extended measurement functions

GX2-L

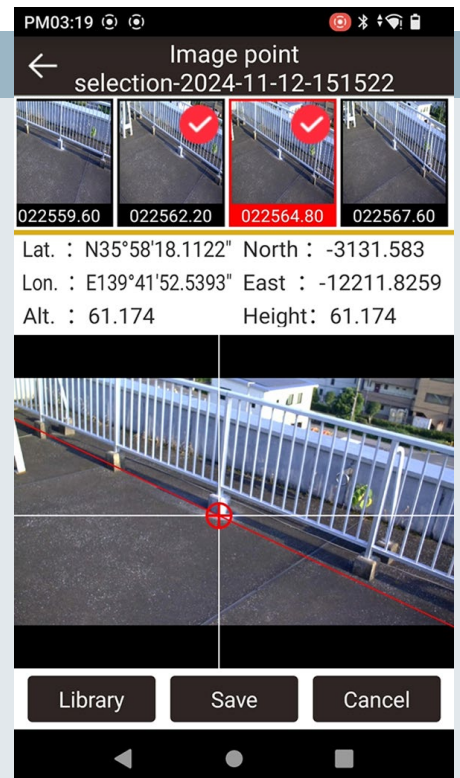


Laser measurement

GX2-L has a high-precision millimeter-level laser ranging module that allows users to measure points inaccessible to surveyors. Its built-in high-precision IMU compensates for receiver inclinations up to 60 degrees.

Optional Software PTS3.0 is required.

GX2-C



Imaging survey

GX2-C features a 1/2.6-inch large base high-definition wide-angle camera mounted on the side of its housing. It can capture images for photogrammetry measurements.

Optional Software PTS3.0 is required.

GNSS SPECIFICATIONS

Model		GX2-A		GX2-L		GX2-C	
Channel Configuration		1408 channels					
		Multi-Frequency for GPS, GLONASS, Galileo, Beidou and QZSS					
Receiver Board		UM980					
Signal Tracking		GPS					
		L1 (L1C/A, L1C), L2 (L2P, L2C), L5					
		GLONASS					
		L1, L1C/A, L2 (L2 C/A, L2P), L3					
		BEIDOU					
		B1 (B1I, B1C), B2 (B2I, B2a, B2b), B3 (B3I)					
		Galileo					
		E1 (E1BC), E5a, E5b, E6, AltBOC *1					
Position Accuracy		QZSS					
		L1 C/A, L1C, L2C, L5, L6 *1					
		SBAS					
		L1 C/A(WAAS, EGNOS, GAGAN, MSAS)					
		NavIC (IRNSS)					
RTK Performance		L5, L1 *1					
		PPP					
		B2b,E6					
Static Performance		Horizontal / Vertical					
		0.5 m (RMS) / 0.7 m (RMS)					
		0.25 m + 1 ppm (RMS) / 0.5 m + 1 ppm (RMS)					
RTK Performance		Horizontal Accuracy					
		8 mm + 1 ppm (RMS)					
		Vertical Accuracy					
		15 mm + 1 ppm (RMS)					
		Horizontal Accuracy (Network RTK)					
		8 mm + 0.5 ppm *2 (RMS)					
PPP (Precision Point Positioning)		Vertical Accuracy (Network RTK)					
		15 mm + 0.5 ppm *2 (RMS)					
		Average Time to Work					
		Typ. < 10 sec.					
Static Performance		Availability/Initialization Reliability					
		> 99.9%					
		Horizontal Accuracy (Long time observation) *3					
		3 mm + 0.1 ppm *3 (RMS)					
PPP (Precision Point Positioning)		Vertical Accuracy (Long time observation) *3					
		3.5 mm + 0.4 ppm *3 (RMS)					
		Horizontal Accuracy					
		2.5 mm + 0.5 ppm (RMS)					
Ports		Vertical Accuracy					
		5 mm + 0.5 ppm (RMS)					
		Horizontal: 5 cm (RMS) / Vertical: 10 cm (RMS)					
Internal Radio Modem		Lemo 7-pin, external radio and power supply					
		USB - Type C, SMA cpnnector					
		Frequency					
		410 Mhz - 470 Mhz					
		Output Power					
Cell Modem		0.5 W / 1.5 W (2 W for special area)					
		Modem					
		Fully supports 2 / 3 / 4 G networks					
		Frequency Bands					
		LTE FDD:B1/2/3/4/5/7/8/12/13/18/19/20/25/26/28					
Power		LTE TDD: B38/39/40/41					
		WCDMA: B1/2/4/5/6/8/19					
		GSM: B2/3/5/8					
		Network Protocol					
		NTRIP, HTTP, FTP, TCP, UDP					
Weight		Internal Battery					
		3,350 mAh / 7.4 V x 2					
		Current Drain					
Dimensions		0.24 A / 12 V					
		Battery Running Time					
		Approx. 20 hr: Rover with 2 Batteries					
Environmental Specifications		1.03 kg with 2 batteries					
		Ø 156.8 mm x H 83 mm					
		Operating Temperature					
		-20 °C to +60 °C					
Velocity Accuracy		Storage Temperature					
		-40 °C to +80 °C					
		Shock/Drop					
		Withstand 2 m pole drop					
Data Output		Humidity					
		100 % non-condensing					
		Standalone					
		0.03 m/sec RMS					
Time to First Fix		Raw Data output frequency					
		up to 20 Hz					
		NMEA Data output frequency					
IMU		up to 20 Hz					
		Correction Data Protocol					
		RTCM 2.X, RTCM3.X, CMR, CMR+ *4					
		Cold Start					
WiFi		< 40 sec					
		Warm Start					
		< 20 sec					
Photogrammetry		Reacquisition					
		< 1 sec					
		IEEE 802.11b/g/n					
		Yes					
Imaging		Electric Bubble					
		Tilt compensated					
		Tilt range up to 60°					
AR Stakeout		Tilt accuracy					
		2 cm (RMS)					
		Downward (AR Camera)					
Laser Measurement		Resolution: 1920 x 1080					
		Field of view: D70.3° H62.7° V38.6°					
		Side (Photogrammetry Camera)					
Laser Wavelength and Power		N/A		N/A		Resolution: 1920 x 1080 Field of view: D51.8° H42.4° V32.4°	
		N/A		N/A		Typical 2 ~ 4 cm, measuring distance 2 ~ 15 m with PTS 3.0	
		N/A		5.5 cm (RMS, 3D distance up to 5 m) with PTS 3.0		N/A	
Bluetooth		N/A		Laser wavelength 520 nm ± 20 nm		N/A	
		N/A		Laser output power: 2-3 mW			
		N/A		BR + EDR + BLE			
Memory		Internal 32 GB (24GB for User Data Storage)					
		Complied					
		IP 68					
RoHs		Tested in accordance with MIL-STD-810G, Method 514.6, Annex C, Figure 514.6C-1, Category 4					
		CE					
		2 x Li-Ion rechargeable battery pack					
Waterproofing		Battery charger + AC Adapter					
		UHF radio antenna (longer one)					
		5/8 inch screw adapter					
Vibration		QR Code Card for Online User Manual					
Certification							
Standard Accessories							

*1 Hardware ready.

*2 Network RTK ppm values are referenced to the closest physical base station and depends on the network performances.

*3 Performance, Accuracy and Reliability are dependent upon various factors including satellite geometry, number of satellites, ionospheric conditions, atmospheric conditions and multipath.

*4 For future upgrade

PENTAX Positioning System is dedicated to providing customers with first class positioning system products and freedom of choice. We have carefully designed high-quality products to meet the needs of today's surveyors based on the experience of many years involved in instrument design and construction. Our engineers have been involved in Survey products since the beginning of the Satellite Surveying Era. We are committed to ease of use, a low cost of ownership and flexibility to accommodate different working environments. Our close partners are carefully chosen and are committed to these values as we are.

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ISO 9001: 2015 Certified



The CE marking assures that this product complies with the requirements of the EC directive for safety.

JSIMA
Japan Surveying Instruments Manufacturers' Association

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