

EELINK | DEPLOYMENT GUIDE

GPT12-X Ultra

Deployment & Installation Guide

Step-by-step instructions for SIM provisioning, device activation, physical installation, platform verification and fleet-scale rollout of the GPT12-X Ultra LTE-M / NB-IoT asset tracker.

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1. Before You Begin

This guide covers the complete process from unboxing to verified deployment for the Eelink GPT12-X Ultra LTE-M / NB-IoT asset tracker. It is written for field technicians, project engineers and deployment managers.

1.1 What you need

Item	Notes
GPT12-X Ultra unit(s)	Each unit ships with SIM tray tool and mounting accessories.
Activated Nano-SIM card	LTE-M or NB-IoT plan with data enabled. PIN code must be disabled before insertion. Confirm sufficient credit/balance.
Tracking platform access	Eelink Keelin, or your own platform with EELINK protocol integration. Have IMEI registered before field visit.
Mounting hardware	Screws (M3), industrial adhesive (3M VHB recommended), or cable ties — match to asset surface.
USB Type-C cable (optional)	For configuration or debugging via PC tool. Not needed for standard deployments.
Mobile phone	For sending test SMS commands (WHERE#, etc.) and verifying platform response.

1.2 Device quick reference

Specification	Value
Dimensions	100 × 53 × 12.5 mm
Weight	≈80.5 g (with battery)
Battery	5000 mAh Li-MnO ₂ , sealed, non-rechargeable
Network	LTE-M / NB-IoT (no 2G/3G fallback)
GNSS	GPS / GLONASS / BeiDou / Galileo / QZSS + LBS fallback
IP rating	IP67 (dust-tight, submersion to 1 m / 30 min)
Operating temperature	−20°C to +65°C
Power on	Press and hold button ≥3 seconds

2. SIM Card Installation

⚠ Power off the device before inserting or removing the SIM card.

Inserting a SIM while the device is powered on may cause registration failure or data corruption.

- Step 1:** Open the back cover using the provided tray tool or a small flat-head screwdriver. Handle gently — the IP67 seal is integrated into the cover gasket.

2. **Step 2:** Insert a Nano-SIM card with data plan activated, PIN code disabled, and sufficient credit. The SIM tray orientation is marked inside the compartment.
3. **Step 3:** Close the back cover and press firmly around all edges to re-seat the IP67 gasket. An improperly sealed cover compromises water and dust protection.

SIM requirements

The SIM must support LTE-M or NB-IoT. GPT12-X Ultra has no 2G/3G fallback — a SIM-only data plan on a legacy network will not connect. Confirm LTE-M/NB-IoT coverage at your deployment sites before ordering SIM cards in volume.

3. Device Activation

3.1 Power on

4. **Step 1:** After SIM installation, press and hold the power button for ≥ 3 seconds until the LEDs begin flashing.
5. **Step 2:** Observe both LEDs during the boot sequence (see 3.2 below). The device will attempt to register on the LTE-M/NB-IoT network, then acquire a GNSS position.
6. **Step 3:** Place the device outdoors with the marked top side (“THIS SIDE UP”) facing the sky. Wait up to 2 minutes for the first position fix.

3.2 LED indicator reference

LED	Pattern	Meaning
Red (network)	Fast blinking	Searching for LTE-M / NB-IoT network
Red (network)	Slow blinking	Network registered successfully — device is online
Blue (GNSS)	Fast blinking	Searching for GNSS satellites
Blue (GNSS)	Slow blinking	GNSS fix acquired — position available
Both off	No light	Device is in deep sleep (PSM) — normal after successful report

After a successful position report, the device enters PSM deep sleep and both LEDs turn off. This is normal operation — the device is not powered down.

3.3 Power off

GPT12-X Ultra is powered off via SMS command, not by button press. Send the power-off SMS command from an authorized number. Refer to the SMS Command List for the exact syntax.

4. Physical Installation



Installation quality directly determines GNSS performance and battery life.

A poorly placed device — under thick metal, wrong side up, or in a vibration-heavy location — will consume more energy per fix and report less accurately. Get it right the first time.

4.1 The four rules of GPT12-X Ultra placement

#	Rule	Why it matters
1	Top side faces the sky	The GNSS antenna is on the top face, marked “THIS SIDE UP.” Inverting the device blocks satellite reception and forces prolonged fix attempts that drain the battery.
2	No thick metal above	Metal roofing, container walls and heater-film windshields attenuate GNSS signals. If the asset has a metal top, install on an external surface, inside a fiberglass panel, or in a structural cavity with a non-metallic cover.
3	Concealed but accessible	For theft deterrence, hide the device where it is not casually visible. For serviceability, ensure you can access it without disassembling the asset.
4	Away from vibration sources	Constant mechanical vibration (engines, compressors) triggers false motion wakes that consume battery. Mount on chassis members or structural surfaces, not directly on vibrating equipment.

4.2 Recommended mounting positions by asset type

Asset type	Suggested installation position
Trailer / semi-trailer	Underside of chassis cross-member or inside a non-metallic body panel, top side facing down toward the road (if chassis is above, flip orientation so GNSS faces open sky through the ground). Preferred: inside the front wall cavity with top side toward the trailer roof if roof is fiberglass.
Shipping container	Inside the container near the door frame (clearest sky access when doors open). For sealed containers, mount on an external bracket under the corrugation profile. Light sensor can serve as door-open tamper detection.
Pallet / RTI	Slim profile (12.5 mm) fits inside pallet runners or between deck boards. Use industrial adhesive on clean, dry wood or plastic surfaces. Ensure top side orientation toward open sky when pallet is stacked normally.
Rental / construction equipment	Inside a non-metallic panel or under a plastic cowling. Avoid engine compartments (heat and vibration). Cable-tie to structural frame if adhesive is impractical.
Remote infrastructure	On cabinets, gates, pumps: mount on the external surface or inside a non-metallic enclosure. Confirm LTE-M/NB-IoT coverage at the site before deployment.

4.3 Mounting methods

- **Screw mount (M3):** Most secure for long-term fixed installations on trailers, containers and equipment frames. Pre-drill pilot holes; do not over-torque through the enclosure mounting tabs.
- **Industrial adhesive (3M VHB or equivalent):** Clean the surface with isopropyl alcohol, apply even pressure for 30 seconds, allow 24 hours for full bond strength. Best for pallets, flat panels and indoor infrastructure.
- **Cable ties:** Quick and reversible. Route ties through the mounting tabs, pull snug. Use UV-resistant ties for outdoor installations. Suitable for evaluation, pilot and temporary deployments.

5. Platform Verification

Do not close panels or leave the site until you have confirmed end-to-end data flow.

5.1 Verification checklist

7. **Step 1:** Confirm the device appears online on your tracking platform (Keelin or third-party) with the correct IMEI.
8. **Step 2:** Verify the reported position matches the actual installation location within a few meters.
9. **Step 3:** Trigger a short movement (push the asset or walk it 20 meters) and confirm a motion event or updated position appears on the platform.
10. **Step 4:** Send a WHERE# SMS to the device SIM number. Confirm you receive a position reply or map link.
11. **Step 5:** Check battery voltage or percentage in the first report payload. Note this as the baseline for future comparison.
12. **Step 6:** If using light-sensor tamper detection: cover and uncover the top surface and confirm a tamper alert reaches the platform.

For fleet-scale rollouts

Create a standardized sign-off form that field technicians fill per unit: IMEI, SIM ICCID, asset ID, installation position, GNSS fix confirmed (Y/N), platform report confirmed (Y/N), initial battery %, timestamp. This log becomes your pilot data baseline.

6. Troubleshooting

Symptom	Resolution
Red LED fast-blinks continuously	Network not found. Verify SIM has LTE-M/NB-IoT plan (not 2G/3G-only). Check coverage at site. Try repositioning device outdoors. If SIM has PIN enabled, disable it via a mobile phone first.
Blue LED fast-blinks, no fix	GNSS obstructed. Move device to open sky. Cold start can take up to 35 seconds. If installed under metal, relocate to a position with sky view. First fix after long storage may take longer.
Device does not appear on platform	Confirm IMEI is registered on the platform. Check that the server address and port are correctly configured (factory default or via SMS command). Verify SIM data plan is active and has credit.
Position drifts significantly	GNSS signal is poor at the installation location. Move device to a position with clearer sky view. In dense urban areas, some drift is normal. If using LBS fallback (>100 m accuracy), this is expected behavior when GNSS is unavailable.
Battery drains faster than expected	Check reporting frequency and mode (Activity/Emergency consume much more than Long Standby). Check for excessive motion-triggered wakes. Review GNSS fix times in report payloads — long fixes indicate installation obstruction. See the Battery Life White Paper for detailed analysis.
SMS commands not received	Device may be in PSM deep sleep. Wait for the next scheduled eDRX listening window, or wait until the next scheduled report cycle. Check SMS command syntax against the Command List. Ensure the sending number is authorized if admin-number restrictions are configured.

Light-sensor tamper alerts not triggering

Confirm the light sensor (on the back/bottom face) is not permanently covered by the mounting surface. The sensor detects ambient light changes — it must be exposed to the environment to function. Check alarm configuration on the platform.

7. Fleet-Scale Deployment Best Practices

- **Pre-provision in batches.** Insert SIMs, register IMEIs on the platform, and verify connectivity for each unit in the office/warehouse before dispatching to field sites. This isolates SIM/network problems from installation problems.
- **Standardize the installation position.** For each asset type, define one approved mounting position and document it with a photo. Field technicians should not improvise placement.
- **Use the sign-off form.** Every installed unit gets a record: IMEI, asset ID, position, GNSS confirmed, platform confirmed, initial battery. This is your pilot baseline and your warranty evidence.
- **Run 60–90 days before scaling.** A pilot of 50–100 units across representative conditions validates battery, connectivity and fix performance. See the Battery Life White Paper for pilot methodology.
- **Configure mode and interval before shipping.** Set the operating mode (Long Standby / Trip / Activity) and reporting interval via the platform or SMS before field deployment. Changing modes after installation requires SMS/downlink reach, which may be delayed in PSM.
- **Plan for end-of-life.** The sealed primary battery is not user-replaceable. At end of life (typically 3–5 years), plan to replace units or coordinate refurbishment with Eelink under your service agreement.

8. Related Resources

Document	Where to find it
User Manual (PDF)	eelinktech.com → GPT12-X Ultra product page → Resources → Download
Datasheet (PDF)	eelinktech.com → GPT12-X Ultra product page → Resources → Download
Battery Life White Paper + Calculator	eelinktech.com → Resources → White Papers, or request from info@eelinktech.com
SMS Command List	eelinktech.com/command-list/
Protocol & Integration Docs	Request from info@eelinktech.com

9. About Eelink

Shenzhen Eelink Communication Technology Co., Ltd., founded in 2004, is an ODM manufacturer of GPS and IoT tracking hardware serving customers in 100+ countries. R&D is based in Shenzhen, with dual manufacturing sites in Yibin, China and Haiphong, Vietnam providing 500,000+ units/month combined capacity for supply chain resilience, operating under ISO 9001, ISO 14001, IATF 16949 and ISO 45001 quality systems.

GPT12-X Ultra product page: www.eelinktech.com/gpt12-x-ultra-lte-m-nb-iot-asset-tracker/

Sales and engineering inquiries: info@eelinktech.com · www.eelinktech.com/contact-us/

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