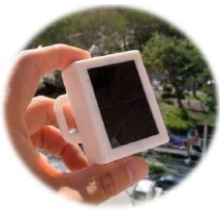
# *ET-202, Smallest Solar GPS - Sustainable Cat M Cellular Tracker For Asset Tracking*

RoHS Compliant



## Overview

Thanks to the advancement in technologies of energy harvest, LPWAN, and GPS, ET-202 is a mini, sustainable solar GPS tracker that charges herself by direct/tilted sunlight with 75% higher efficiency than present commercial solutions. It reports[#] position every 15 minutes autonomously without maintenance demand of manually power charging.

The mini-size of 60x50x28 $mm^3$ allows it to be easily used together with multitude of assets. The Cat M/NB-IoT[&] LPWAN cellular technology consumes less power than ever. The internal GPS with AGPS support fixes position even in deep urban area.

The built-in 3-axis G-sensor detects every movements. It can save power automatically when there is no movement. Features such as alerts of movement, geo-fence in/out are ready for use.

Unlimited groups and trackers inside a group support by APP (Android & iOS) & WEB makes the asset management easy and simple. Cloud notification allows one to handle any emergency immediately by your smartphone.

[#] Report behavior could be customized, e.g. reports only on moving and stop.

[&] Default works in Cat M mode.

## Applications

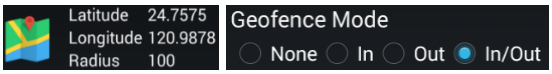
- Asset tracking – bicycles, trailers, excavators, bulldozers, forklift, containers etc.

## Features[+]

- High efficiency energy harvester
- Thales high performance Cat M module
- SiRFStarV GPS&GLONASS w/ AGPS support
- Bosch tri-axis G-Sensor
- Recovery from communication dead-zone – auto-retransmit after passing null-cellular signal zone.
- Smart power saving as there is no moves[!]
- OTA firmware upgrade (for maintenance use)
- APP support




- Easy geo-fence setting[!] – click & drag on map




- Powerful history browsing/playback function
- 1 month history data stored on the server

[!] Default disabled. MOQ-based feature customization is welcome.

## Technical Specifications

### Cellular Characteristic Data

| | |
|---|---|
| Module | Thales/Cinterion EXS62-W |
| Frequency bands[!!] | Default 1800 (Bd3) enabled |
| Cat M1 | 700 (Bd12, Bd13, Bd28, Bd85), 800 (Bd18, Bd19, Bd20, Bd26, Bd27), 850(Bd5), 900 (Bd8), AWS-3 (Bd66), AWS-1 (Bd4), 1800 (Bd3), 1900 (Bd2,Bd25), 2100 (Bd1) |
| Cat NB1/2 | 600 (Bd71), 700 (Bd12, Bd13, Bd28, Bd85), 800 (Bd18, Bd19, Bd20, Bd26), 850 (Bd5), 900 (Bd8), AWS-3 |

**NaviSys Technology Corp.**
Tel : +886-3-5632598
Sales contact: sales@navisys.com.tw
Address: 2F, No.56, Park Ave. II, Science-Based Industrial Park, Hsinchu 300, Taiwan (R.O.C.)
http://www.navisys.com.tw/
Fax: +886-3-5632597
Technical support: service@navisys.com.tw

| | |
|---|---|
| | (Bd66), AWS-1 (Bd4), 1800 (Bd3), 1900(Bd2, Bd25), 2100 (Bd1) |
| Data rate - 3GPP Release 14 | LTE Cat M1 (HD-FDD)<br>DL: max. 300kbps,<br>UL: max. 1.1Mbps<br>LTE Cat NB1 (HD-FDD)<br>DL: max. 27kbps,<br>UL: max. 63kbps<br>LTE Cat NB2 (HD-FDD)<br>DL: max. 124kbps,<br>UL: max. 158kbps |

‼ The built-in antenna was fine-tuned for bands 1, 3, 8. For other bands, further tuning is required.

## GNSS (GPS & GLONASS) Receiver Data

| | |
|---|---|
| Receiver Type | SiRFstarV - 52 channels,<br>L1 frequency, C/A code<br>GPS & QZSS:1575.42MHz<br>GLONASS: 1598.0625~1605.375MHz |
| Horizontal Position Accuracy | < 2.5m (Autonomous)<br>(50% 24hr static, -130dBm) |
| Velocity Accuracy | <0.01 m/s (speed, autonomous)<br><0.01° (heading)<br>(50%@30m/s) |
| Time To First Fix<br>Hot start<br>Warm start<br>Cold start | Autonomous (50% -130dBm)<br><1sec<br><30sec<br><35sec |
| Sensitivity (Autonomous) | Acquisition: -146dBm (GPS)<br>Tracking: -165dBm (GPS),<br>-163dBm(GLONASS)<br>Navigation: -160dBm (GPS),<br>-159dBm(GLONASS)<br>(-142dBm 28dB-Hz with 4dB noise figure) |
| Max. Update Rate | 5Hz |
| Max. Altitude | <18,000 m |
| Max. Velocity | <1,852 km/hr. |
| Protocol Support | NMEA V4.00, 115200 bps (default)<br>GGA, GSA, GSV, RMC, VTG |
| SBAS Support | WAAS, EGNOS, MSAS,GAGAN |
| Dynamics | <4g |

## Electrical Data

| | |
|---|---|
| Rechargeable battery | 3.7V / 2,000mAh, Li-ion |
| Photovoltaic (PV) | $P_{max}$=330mW, with embedded MPPT management system |
| Power system | Daily power ~1100mWh (3.7V/297mAh) in a sunny condition, which can support for 2 days and available for 12 days without sun irradiation. |

## Environmental Data

| | |
|---|---|
| Operating temperature | -10 ~ 60℃ |
| Storage temperature | -20 ~ 35℃ (long-term storage) |

## Mechanical Data – 60 x 50 x 28 (mm)

## Weight – 90g

## Access Support

1. Work with your own server
   - ■ NDA & sample purchase-based SDK available.
2. Work with Navisys server
   - ✧ Web access from a PC/NB, tablet, smartphone
   - ✧ APP access from a smartphone

*This document is subject to change without notice.

**NaviSys Technology Corp.**
Tel : +886-3-5632598
Sales contact: sales@navisys.com.tw
Address: 2F, No.56, Park Ave. II, Science-Based Industrial Park, Hsinchu 300, Taiwan (R.O.C.)
http://www.navisys.com.tw/
Fax: +886-3-5632597
Technical support: service@navisys.com.tw