Sustainable Mini Solar Tracker / SPK-TRK-S202

SPK-TRK-S202, 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, SPK-TRK-S202 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.

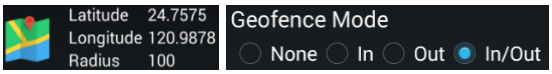
Features[+]

- 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

Available on the App Store

ANDROID APP ON Google play

- 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

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	(Bd66), AWS-1 (Bd4), 1800 (Bd3), 1900(Bd2, Bd25), 2100 (Bd1)
Data rate - 3GPP Release 14	LTE Cat M1 (HD-FDD) DL: max. 300kbps, UL: max. 1.1Mbps LTE Cat NB1 (HD-FDD) DL: max. 27kbps, UL: max. 63kbps LTE Cat NB2 (HD-FDD) DL: max. 124kbps, 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, L1 frequency, C/A code GPS & QZSS:1575.42MHz GLONASS: 1598.0625~1605.375MHz
Horizontal Position Accuracy	< 2.5m (Autonomous) (50% 24hr static, -130dBm)
Velocity Accuracy	<0.01 m/s (speed, autonomous) <0.01° (heading) (50%@30m/s)
Time To First Fix Hot start Warm start Cold start	Autonomous (50% -130dBm) <1sec <30sec <35sec
Sensitivity (Autonomous)	Acquisition: -146dBm (GPS) Tracking: -165dBm (GPS), -163dBm(GLONASS) Navigation: -160dBm (GPS), -159dBm(GLONASS) (-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) 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 Web
   - ✧ Web access from a PC/NB, tablet, smartphone
   - ✧ APP access from a smartphone
3. This document is subject to change without notice.

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