

Nano Tracker

World's Smallest Tracking Device

Product Description

NanoTracker is a wearable tracking device. It has a built-in battery and can be used in a variety of everyday applications for persons, animals or items to be located using GPS.

This small tracking device fits easily in your pocket, can be carried on a key ring or on a dog collar and has several alarm functions, depending on the programming:

- **"Panic-Button"** for an emergency call in case of danger (optional)
- **"Geofencing"** to alert when leaving a defined geographical zone
- **"Wellness"**-Function that detects when the device has not moved for a certain period via accelerometer and sends an emergency alert

The NanoTracker uses a SIRF 4 GPS chipset and a 2G module from Telit. Optionally, a 3G or 4G module can be fitted. The device is battery-powered and under normal working conditions, the 380mAh battery lasts up to 4 working days. Furthermore, the device has an accelerometer to detect movements / idle states to enable/disable the modem and the GPS module to preserve the battery in sleep mode. The battery can be charged via USB port. The data are sent at preset intervals via HTTP. The NanoTracker can be fully configured and diagnosed via USB or SMS.

Additional Services

At the customer's request, RoundSolutions can expand the NanoTracker and adapt it to project-specific requirements. If you miss a technology or function in the basic version of the NanoTracker, please write us an inquiry.

Round Solutions also offers software development kits for NanoTracker board with Python, enabling software developers to create custom firmware for the device quickly, resulting in the acceleration of the launch time. The collected data can be easily sent to an IoT Cloud, which allows rapid establishment of tracking platform.

The GUI for the IoT cloud is available from any web browser or mobile via a smartphone or tablet.

By using the IoT SIM cards, a stable data transfer between NanoTracker and cloud can be achieved and can work at any place in the world. Through global automatic roaming it is always active in the



Round Solutions Design Team

Designed and manufactured to perfection in Germany

Interfaces

- USB micro B
- SIM holder: Nano SIM
- Antenna Connector Cellular: U.FL

Data

- TCP over GPRS
- SMS

Environmental

- Dimensions:
 - PCB: 40,8 x 22,5 x 9,7mm
 - Housing (optional): 60 x 33 x 13mm
- Extended temperature range -40°C to +85°C
- Power Consumption
 - During transmission: up to 310mA
 - Active mode: ~90mA
 - Sleep mode: <1mA
- Power Management
- 3.7V – 380 mAh LI-Po battery (optional)

Available for

- EMEA
- North America
- Latin America*
- APAC*
- Korea
- Australia

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Battery Life	Positioning Interval
2,1 hours	Every 5 seconds
3,3 hours	Every 60 seconds
14 hours	Every 5 minutes
43 hours	Every 30 minutes
75 hours	Standby mode (GPS off)
3 Month	Motion mode

Product and Hardware Features

- 2G Cellular Module (3G or 4G optional)
- SIRFstarIV GPS Module integrated antenna: -163dBm sensitivity
- USB micro B Interface for configuration, debugging and charging battery
- Onboard Microcontroller: PIC18F46K22*
- Onboard Accelerometer for movement detection and power saving
- 3.7V – 380 mAh LI-Po battery (optional)
- Nano SIM Card Holder
- Internal memory: 32KB EEPROM
- Configurable transmission interval via USB, SMS, and GPRS
- Data is relayed to server via HTTP Post
- Posted data includes Longitude, Latitude, speed, date, time, and battery voltage.
- Modem Emulation via USB

Approvals

- CE

*Source code available on request



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Optional with housing

GPS

- GPS Module: ORG1411 from OriginGPS
- GPS Accuracy: 2,5m
- Active antenna on-board
 - OriginGPS Noise Free Zone System (NFZ™) technology
- Fully integrating: Low profile antenna element, Dual-stage LNA, SAW filter, TCXO, RTC crystal, GPS SoC, PMU, RF shield
- GPS L1 1575.42 frequency, C/A code
- SBAS (WAAS, EGNOS, MSAS) and QZSS support
- 48 channels
- Ultra-high Sensitivity down to -163dBm enabling Indoor Tracking
- TTFF of <1s in 50% of trials under Hot Start conditions
- Active Jammer Detector and Remover
- Fast Time Synchronization for rapid single satellite time solution

Acquisition Time

OPERATION	VALUE	UNIT
Hot Start	< 1	s
Signal Reacquisition	< 1	s
Aided Start	< 10	s
Warm Start	< 32	s
Cold Start	< 35	s

Sensitivity

OPERATION	VALUE	UNIT
Tracking	-163	dBm
Reacquisition	-162	dBm
Navigation	-161	dBm
Hot Start	-160	dBm
Aided Start	-156	dBm
Cold Start	-148	dBm

CELLULAR

NanoTracker with 2G module GE866

- Available for EMEA; North America, Latin America, APAC, Australia
- Quad-band GSM/GPRS 850/900/1800/1900 MHz
- Embedded TCP/IP stack, including TCP, IP, UDP, SMTP, ICMP and FTP protocol
- Mobile station class B
- Point-to-point mobile originated and mobile terminated SMS
- Real-time clock
- Jamming detection
- Remote AT commands
- Python version = 2.7.2
- Output power
 - Class 4 (2 W) @ 850/900 MHz
 - Class 1 (1 W) @ 1800/1900 MHz

NanoTracker with 3G module UE866

- Available for North America, 3G-only
- Dual band UMTS | HSPA 850/1900 MHz
- Built in UDP/TCP/FTP/SMTP stack
- GPRS Uplink up to 5.76 Mbps | Downlink up to 7.2 Mbps | UMTS Up-/Downlink up to 384 kbps
- Output power
 - Class 3 (0.25 W, 24 dBm) @ UMTS
- Python version = 2.7.2

NanoTracker with 4G module LE866

- Available for North America, 4G-only
- Dual band LTE B4/B13
- IPv4/IPv6 stack with TCP and UDP protocol
- LTE Uplink up to 5 Mbps | Downlink up to 10 Mbps
- Output power
 - Class 3 (0.2 W, 23 dBm) @ LTE

Order Code

- PCB-NT-2G (2G Global Version)
- PCB-NT-3G (3G Europe Version)
- PCB-NT-3G-NA (3G North America Version)
- PCB-NT-4G (4G North America Version)
- ANT-GXP4717-UFL (Cellular 2G+3G Antenna)
- ENC-NANO-6033V1 (Housing Plastic)
- SER-STARTERSIM (Telit IoT Starter SIM)

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