Cellocator Division
Pointer Telocation Ltd.

CelloTrack Nano Introduction

V 1.0 – December 2015

CelloTrack Family Expands
From heavy duty asset monitoring

CELLOTRACK T

CelloTrack Family Expands
...to cargo and small asset management

CelloTrack Nano Delivers

*Real Time Cargo & Asset **Visibility**, **Efficiency** and **Security***

- **Visibility**

Enables **real-time** awareness of cargo and asset location, condition, problems and delays using a portable hub and short range **Wireless Sensor Network (WSN).**

- **Efficiency**

Ensures continuous recording, **event-triggered logic** and 'management by exceptions' through flexible programming of business rules to avoid supply chain mistakes, delays or damages and to lower insurance expenses.

- **Security**

Prevents losses due to theft, loss and misplacement using proximity, tampering and location sensing throughout the entire transport chain.

Features, Capabilities & Specifications

CelloTrack Nano™ Hub

Innovative, smart and compact asset monitoring device

CelloTrack Nano™ Hub
Innovative, smart and compact asset monitoring device

COMMUNICATION

- ✓ 2G / 3G
- ✓ SIM: Regular SIM holder, Optional for M2M type SIM chip
- ✓ SMS
- ✓ Packet Data - TCP/IP, UDP/IP
- ✓ **BLE** (Bluetooth Low Energy) - 2.4GHz wireless communication
- ✓ Used as a hub for a WSN for MultiSenses via BLE interface
  - ✓ **Up to 16 paired MultiSenses**
  - ✓ **Unlimited MultiSenses in 'guest mode'**
- ✓ **Cellocator+**

* BLE SIG certification is under product evolution process

CelloTrack Nano™ Hub
Innovative, smart and compact asset monitoring device

GNSS

- ✓ SiRFstarV™ engine supporting **Hybrid GPS** and **GLONASS**
- ✓ Sensitivity (tracking): -165dBm
- ✓ Acquisition (normal): Cold <35Sec, Hot<1Sec
- ✓ Antenna: On board, internal patch antenna
- ✓ AGPS*

* Second Phase

CelloTrack Nano™ Hub
Innovative, smart and compact asset monitoring device

INTERFACES

- ✓ Connector: micro-USB connector for rechargeable and serial configuration
- ✓ OTA update for firmware and configuration
- ✓ Voice Interface:
- ✓ Dimension: 86x59x23 mm
- ✓ Weight: 94 gr (including rechargeable battery)
- ✓ **MMI**:
  - ✓ Buzzer
  - ✓ Status LEDs
  - ✓ Multi-function buttons

CelloTrack Nano™ Hub
Innovative, smart and compact asset monitoring device

POWER

- ✓ Internal Battery: Li-Ion Polymer, 3.7V, 1000mAh, rechargeable
- ✓ Long life battery operation
- ✓ Input Voltage: 5VDC
- ✓ Average Current Consumption:
  - ✓ Normal: 40mA
  - ✓ Economic: 7mA
  - ✓ Hibernation: <1mA
  - ✓ Shipment (Off): <50uA

CelloTrack Nano™ Hub
Innovative, smart and compact asset monitoring device

INTERNAL SENSORS

- **Temperature**: Accuracy ±1.0°C, Resolution 0.1°C
- **Light**: Effective range 1÷1023 lux
- **Impact**: Impact with threshold up to 8g
- **Movement**: Detection of stationary or movement state by accelerometer
- **Dual Tampering**:
  - Removal from cradle
  - Tilt-based with programmable threshold
- **Barometric Pressure**: Air pressure translation to "Meters above sea level“
- **Listen in**: Built-in microphone

CelloTrack Nano™ Hub
Innovative, smart and compact asset monitoring device

ENVIRONMENT

- ✓ Temperature:
  - ✓ Temp, operation: -20°C to +60°C
  - ✓ Temp, storage: -40°C to +85°C
- ✓ Humidity: 95% non-condensing
- ✓ Impact: Impact with threshold up to 8g
- ✓ Ingress Protection: **IP56**
- ✓ Vibration, Impact: According to standards EN 12830
- ✓ Mounting (with cradle):
  - ✓ Screws ✓ nylon tie-wraps ✓ double-sided adhesive
  - ✓ Magnetic cradle ✓ belt clip adapter

CelloTrack Nano™ Hub
Innovative, smart and compact asset monitoring device

CERTIFICATION

- ✓ FCC: Part 15 Subpart B, part 22/24 compliant
- ✓ CE
- ✓ IC: Industrial Canada
- ✓ PTCRB
- ✓ UL
- ✓ AT&T
- ✓ EN12830: Temperature recorders for the transport, storage and distribution of chilled, frozen, deep-frozen/quick-frozen food and ice cream.
- ✓ GDP: Good Distribution Practice (Europe, US)

MultiSense Devices
A game changer in remote cargo & asset monitoring

COMMUNICATION

- ✓ **BLE** (Bluetooth Low Energy) communication forms a cost effective Wireless Network with the Nano

INTERFACES

- **Low profile**: Diameter 46mm, Height 15mm Weight: 19 gr (without battery)
- **MMI**:
  - On/off and event trigger button
  - Status LED
  - Easy battery replacement
  - Simple pairing with CelloTrack Nano

POWER

- Internal Battery: 3V Lithium coin battery CR2450 (620mAh)
- Average Current Consumption:
  - Transmission pulse: 23mA
  - Active connection with Nano (Avg): <250uA
  - Hibernation (idle, light sensor disabled): <25uA
  - Hibernation (idle, light sensor enabled): <100uA
  - Shipment (Off): <5uA
- Long battery life for ~1 year in common use case scenarios

INTERNAL SENSORS

- **Temperature**:
  - Accuracy ±1.0°C, Resolution 0.1°C
  - Accuracy in MultiSense-TH:
    - ±0.5°C in temperature range of 0°C to +65°C,
    - ±1.0°C in temperature ranges of -30°C to 0°C and from +65°C to +85°C.
- **Relative Humidity** (MultiSense-TH): Typical accuracy ±3% RH, Resol
- **Light**: Effective range 1÷512 lux
- **Open/close door**: 10-30mm range from the defined permanent magnet
- **Free fall / Impact**

CelloTrack Nano™ Hub
Innovative, smart and compact asset monitoring device

ENVIRONMENT

- ✓ Temperature:
  - ✓ Operation: -30°C to +85°C,
  - ✓ Storage: -40°C to +85°C
- ✓ Relative Humidity: 95% non-condensing
- ✓ Impact: Impact with threshold up to 8g
- ✓ Ingress Protection: **IP67**
- ✓ Vibration, Impact: According to standards EN 12830
- ✓ Mounting (with cradle):
  - ✓ nylon tie-wraps
  - ✓ double-sided adhesive

CERTIFICATION

- ✓ FCC
- ✓ CE
- ✓ UL
- ✓ EN12830: Temperature recorders for the transport, storage and distribution of chilled, frozen, deep-frozen/quick-frozen food and ice cream
- ✓ GDP: Good Distribution Practice (Europe, US)

Battery Performance

Template number:	#1	#2	#3	#4	#5	#6	#7
Template name:	**Long shipment with MS** almost live-tracking	**Long shipment without MS** almost live-tracking	**Typical CelloTrack-T users** improved tracking	**Long shipment with MS**, offline tracking (15-25 C)	**High value goods** (3rd party shipper)	**Land shipment - cold chain 2-8C** (food, Pharmaceutical, flowers, antiques)	**Employee safety** (lone worker)
Scenario:	**Nano**: Tx every 15 min, **MS**: Tx every 1 min	**Nano**: Tx every 15 min	**Nano**: Tx every 24 hours, **MS**: Tx every 1 min	**Nano**: Live tracking 8h per day, logging location every 5 min **MS**: Tx every 5 min	**Nano**: Tx every 15 min	**Nano**: Tx every 15 min, **MS**: Tx every 5 min	**Nano**: Tx every 6 hours, **MS**: Tx every 1 min
	5.5 days	6 days	33 days	5 days	6 days	5 days	25 days (optimal condition) 11 days (harsh conditions)
	10 months	NA	10 months	24 months	NA	18 months	NA

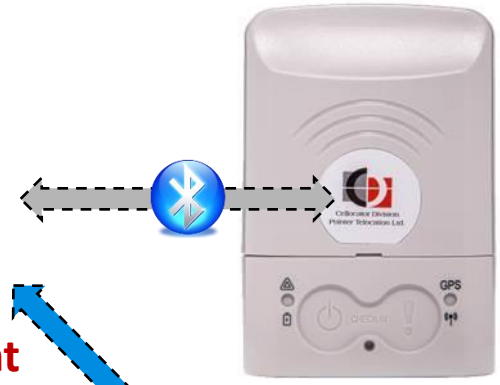
- Where temperature wasn't mentioned, the battery performance is valid for +20°C
- The templates above and battery performances are based on calculated parameters (tens of parameters)

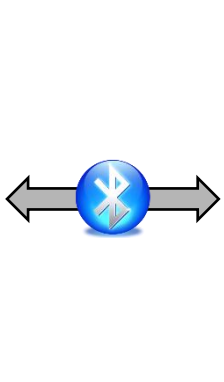
Solution Overview

Solution Overview

GPS

GLONASS





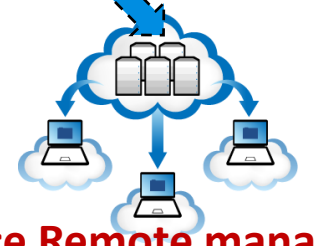
MultiSense

*** Local management**

- ✓ Configuration
- ✓ Shipment history
- ✓ Log upload

CelloTrack Nano

- ✓ Data upload
- ✓ Provisioning



- ✓ Online monitoring
- ✓ Configuration
- ✓ FW upgrade

Back office Remote management

* Next phase

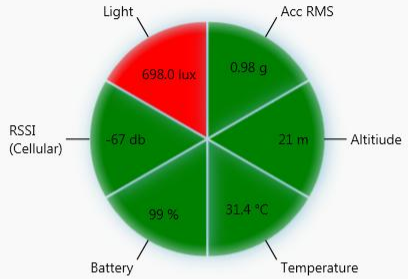
Multi-Sensors Capabilities

Nano Editor

File Actions Communication Help

Dashboard | Sensors status | Sensors Configuration | Legacy events type-11 configuration

CelloTrack Nano Dashboard



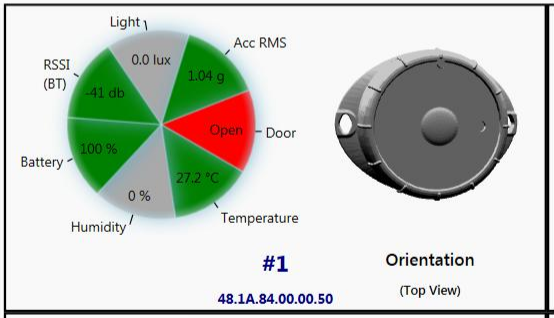
Orientation

(Top View)

Values Legened:

- Good/within limits
- Medium
- Low/out of limits
- Not available

Cellocator Nano Hub

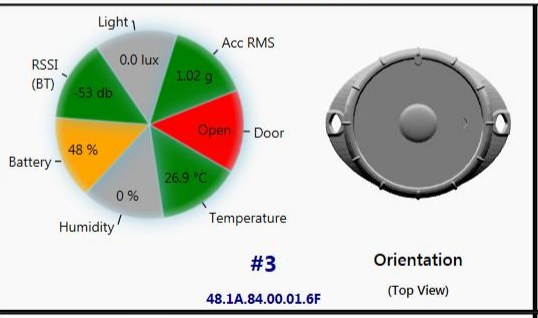


#1

48.1A.84.00.00.50

Orientation

(Top View)



#3

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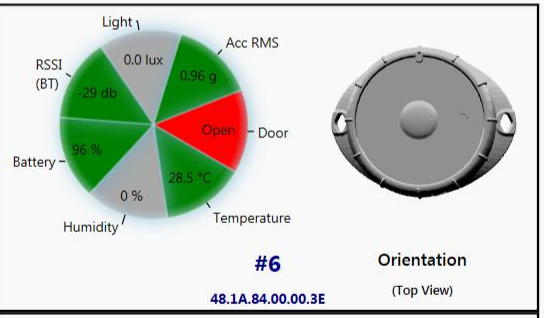
Orientation

(Top View)

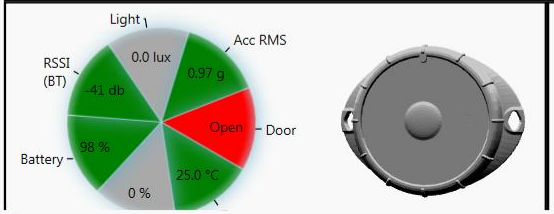


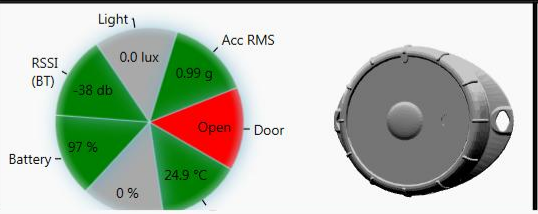
#6

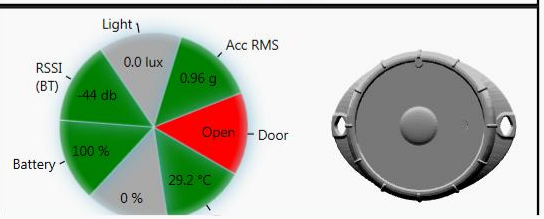
48.1A.84.00.00.3E

Orientation

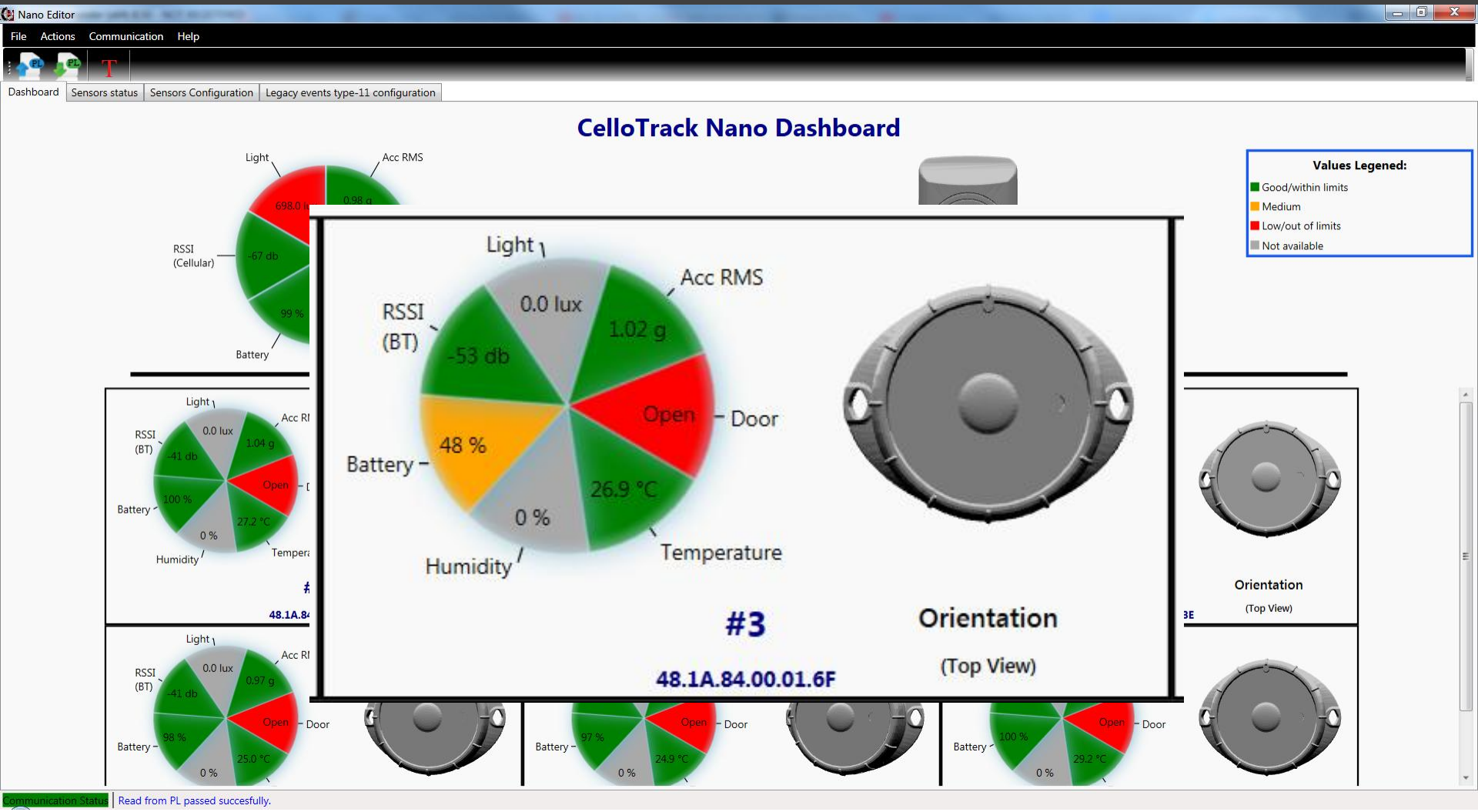
(Top View)







Communication Status | Read from PL passed succesfully.


Nano Editor
File
Actions
Communication
Help
Dashboard
Sensors status
Sensors Configuration
Legacy events type-11 configuration
CelloTrack Nano Dashboard
Values Legened:
Good/within limits
Medium
Low/out of limits
Not available
Light
Acc RMS
RSSI (BT)
0.0 lux
1.02 g
-53 db
Open
Door
Battery
48 %
26.9 °C
0 %
Humidity
Temperature
#3
48.1A.84.00.01.6F
Orientation
(Top View)
RSSI (Cellular)
-67 db
99 %
Battery
-41 db
1.04 g
100 %
27.2 °C
0.97 g
98 %
25.0 °C
97 %
24.9 °C
100 %
29.2 °C
Communication Status
Read from PL passed succesfully.

Target Markets

Market Segments

Applications

COLD CHAIN COMPLIANCE

- CelloTrack Nano and number of MultiSense devices installed inside a temperature controlled container / trailer, or attached to a pallet, box or other type of package loaded with pharmaceutical.
- Guarantee compliance with shipment regulations.
- Enables a real-time response in exceptional cases.

CARGO MONITORING LOGISTICS

- High-value cargo like arts, consumer electronics or other type of high-end merchandise, being sent from distribution centers or manufacturer sites must reach their destination according to shipment order specifications.
- CelloTrack Nano provides real-time alerts if the asset was unloaded at the wrong address, deviated from its planned route, was opened unexpectedly, or mishandled.

RENTAL EQUIPMENT USAGE

- Rental companies and service providers specializing in equipment and assets for short term rental (such as storage containers, construction machines, generators, trailers, mobile offices, and chemical toilets).
- Stakeholders can monitor a profile of their assets' usage during the rental period, including location, damage, displacement, and other inventory management aspects.

EMPLOYEE SAFETY

- An intuitive way to indicate distress by activated a panic button.
- CelloTrack Nano enables the monitoring of workers for their location, health status and general activity (check-in / check out, movement).

CelloTrack Nano 20 hub - clip

Lone Worker solution
CelloTrack Nano vs. Smartphone app

#	Parameter	CelloTrack Nano	Smartphone
1.	Worker SOS triggering	Instant and intuitive access to activate panic button even during distress events	Need to open an app and pressing button or apply certain sequence on small and inconvenient buttons to manage upon distress event.
2.	Solution resilience and reliability	Administrator controls the CelloTrack Nano Parameters and FW version. A dedicated solution	Depending on lone worker activity, smartphone settings, CPU load by other applications, battery capacity due to other Apps consumption etc.
3.	Improved safety and activity monitoring	Build in and integrated HW/FW for man activity/inactivity - monitoring passive alert	Needs to be developed and validated from scratch in the smartphone's application
4.	Loss / theft indication	Tamper triggering from belt clip cradle	Not available
5.	Monitoring capabilities richness	Communicate with external sensors in a wireless sensor network mode (can fit to various of scenarios like patrolling)	No compliant sensors availability
6.	Shift start / end indication	Instant access to check-in / check-out button	Need to open an app and pressing relevant button
7.	Complete visibility and safety	Additional external sensing capabilities (temperature, light, barometric pressure, noise, movement, impact,)	Depending on the smartphone HW and applicative features
8.	Communication security	Proprietary OTA protocol with NOC, increasing security against frauds and/or cyber attacks	Depending on the APP capabilities
9.	Tracking continuity	Up to 10K logged events in case no communication is available	Depending on the smartphone type and available internal memory. Other applications might consume all available memory.
10.	Battery operational time	Long battery-operated periods (up to a few weeks for typical lone worker use)	Depending on the smartphone HW type and efficiency of the app. Usually smartphone are also used for other private activity which reduce power operation to a single day

Benefits

CelloTrack Nano is all about:

- ✓ Preventing risks & exposure to losses
- ✓ Immediately reporting in cases of malfunction
- ✓ Upgrading cargo security
- ✓ Real-time event trigger, monitoring, collecting data and reporting
- ✓ Reducing insurance policy fees
- ✓ Solution Scalability

NOW there's a better way to track your cargo.
CelloTrack Nano

Thank You!

Cellocator Division
Pointer Telocation Ltd.

www.cellocator.com