



CelloTrack Solar™

Robust Solar-Powered Asset Management Device,
Supporting IP69K & Wireless Sensor Networks

The CelloTrack Solar is a standalone dual-powered “deploy and forget” unit for asset tracking and freight visibility, requiring no external power connection. Solar-powered, the CelloTrack Solar comes with long-lasting primary batteries that ensure extended years of maintenance free reliable performance; in addition, its wireless sensor connectivity provides measurements of the various environmental conditions (temperature, humidity, shock, etc.) of your cargo.

The CelloTrack Solar, with its highly rugged durable enclosure sized to perfectly fit the grooves and ceilings of containers, is an ideal solution for containers, trailers or assets in remote locations and harsh conditions, where no other recharging facilities exist.



Highlights

- LTE CAT 1 NA with 3G fallback and LTE CAT 1 EU with 3G and 2G as fallback networks.
- Solar-charged supercapacitors, plus 34Ah Primary non-rechargeable batteries.
- Supports a Wireless Sensor Network.
- Highly rugged durable enclosure, suitable for container grooves and ceilings, and complying with IP67 and IP69k weatherproof casing for outdoor long-life service.
- 10 years operational time (@13 transmissions/day in average conditions).
- SiRFstarV™ based GPS and GLONSS positioning engine for reduced acquisition time and enhanced accuracy.
- 3D accelerometer for crashes, movement and vibration detection, enabling different transmission policies for moving or stationary assets.
- Magnetic tampering detection.
- Two monitoring LEDs for status verification.
- FOTA and over the air remote maintenance and configuration.
- Up to 100 built-in geo-fences and up to 9000 time-stamped events.
- Operating temperature range -30°C to 75°C.
- Easy mounting with maintenance-free, reliable performance.





Use Cases

Containers

Large industrial companies that deliver valuable containers of cargo often experience theft and tampering attempts, resulting in often significant financial damages. In addition, to ensure a valuable cargo reaches its destination intact, monitoring of the cargo's journey is required, from the point of origin to the point of delivery.

The Cellocator Solar allows the continuous tracking of the container and its cargo, as well as providing logistic and inventory information. This information includes measurements of the environmental conditions (temperature, humidity, etc.), and alerts when there is a deviation from the route or predefined conditions.

The CelloTrack Solar, with its highly rugged durable enclosure and perfectly sized for the grooves and ceiling of a container, is an ideal solution for containers; a long-life solution built to last as long as you need container visibility.



Dry Vans & Trailers

The CelloTrack Solar enables you to track the location of dry vans and trailers. When used with MultiSense devices, you can also monitor cargo conditions in real-time, while receiving alarms when deviations from the planned route or required conditions (temperature/humidity) occur, or when doors are opened unexpectedly. The CelloTrack Solar helps to maximize trailer utilization, while reducing operational costs and improving delivery predictability.



Rental Assets

The easy to install CelloTrack Solar enables stakeholders to remotely and efficiently monitor the status of their rented assets' usage, including storage containers, construction machines, electricity generators, caravans, chemical toilets, and more. During the rental period, the location, displacement, operation hours (by movement), door status and other inventory management aspects for adherence of contractual obligations can all be monitored.

The CelloTrack Solar device is ideal for long term leasing applications in remote locations and harsh conditions where no other recharging facilities exist, as it requires no external power connection.



Heavy Equipment

Trucks, earthmovers, paving equipment, dumpsters, generators and machinery – often left for long periods on construction sites – are expensive to replace and, if stolen, can significantly interrupt work progress. The robust, water, dust and extreme temperature resistant CelloTrack Solar device can easily be deployed on all types of heavy equipment. The device immediately generates alerts when the equipment is moved and also provides its precise location to the stakeholder.

The CelloTrack Solar is a long-life solution using a solar-powered system and long-lasting primary batteries; it is ideal for assets located in hard to reach locations, where maintenance is not possible to perform, and no power supply is available.

CelloTrack Solar Specifications

Communication

Cellular communication	<p>LTE Cat 1 NA with 3G Fallback</p> <p>LTE NA: Bands 2, 4, 5, 12 (700, 850, 1700/2100 (AWS), 1900 MHz), data rates: 10.2[DL] / 5.2[UL] Mbps</p> <p>3G NA: UMTS Bands 5, 4, 2 (850, 1700/2100 (AWS), 1900); HSPA 5.76[UL]/7.2[DL] Mbps LTE Cat 1 EU with 3G and 2G Fallback</p> <p>LTE EU: Bands 1, 3, 8, 20, 28 (700, 800, 900, 1800, 2100 MHz), data rates: 10.2[DL] / 5.2[UL] Mbps</p> <p>3G EU: UMTS Bands 1, 8 (900, 2100 MHz); HSPA 5.76[UL]/7.2[DL] Mbps</p> <p>2G EU: GSM 900, 1800 MHz; GPRS: 24[UL]/48[DL] Kbps</p> <p>Packet Data: TCP/IP, UDP/IP</p> <p>SMS: PDU mode</p>
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SIM	<p>Internal, Micro SIM replaceable, 1.8/3V</p> <p>Optional SIM on chip</p> <p>Remote PIN code management</p>
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Antenna	Internal, multi band antenna
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GNSS

Technology	Internal module, SiRFstarV™ based GPS and GLONSS supported
Sensitivity (tracking)	-165dBm
Acquisition (normal)	Cold <27 Sec, Warm<10 Sec, Hot<1 Sec
Antenna	Internal, onboard patch antenna

Interfaces

COM port	Internal USB 2.0 interface over standard micro-USB connector CelloTrack Serial Protocol Debug, Configuration, FW upgrade
3D Accelerometer	3D, ±8g range, 12 Bit representation, 4mg resolution Movement detection
MMI	2 dual colored (red, green) LED status indicators Reed relay and magnet-based activation Reed relay and magnet-based tamper detection
Wireless	2.4 GHz proprietary wireless interface for MultiSense integration Transmission power – 6.5 dBm Line of site – 100 m minimum

Connectors	Internal micro-USB connector
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Power

Internal Battery	Lithium-thionyl chloride (SOCl ₂), 3.6V, 34Ah, primary (non-rechargeable)
Supercapacitor	200F, 5.4V
Solar Panel	Monocrystalline, two panels sized 110x80 mm Max 2.4 W @STC
Average Current Consumption	On taking location and transmission session: 50mA Hibernation: < 230µA Shipment (Off): < 230 µA

Environment

Temp, operating	-30°C – +75°C
Temp, storage	0°C – 30°C (battery limitation)
Humidity	95% non-condensing
Ingress Protection	IP69K, IP67

Environmental Requirements:

<ul style="list-style-type: none">• Temperature• Vibration• Humidity• Mechanical shock• Salt fog• Altitude• Contaminates• Sunlight	Based on: AAR S5703 Railroad Electronics Environmental Requirements MIL-STD-810E
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Mounting	Screws
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Regulatory Compliance / Certification

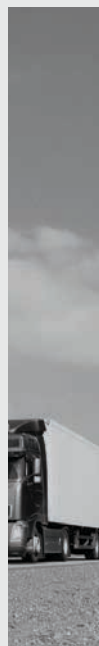
CE	CE Safety EN60950-1:2001+A11:2004
Material Flammability	UL94-5VA
FCC	Part 15 Subpart B, Part 22/24/27; Part 15 Subpart C
IC	ICES-003, Issue 5:2012 Class B CAN/CSA-CEI/IEC CISPR 22:10
PTCRB	LTE and 3G; TRP, TIS, Spurious and harmonics emission
AT&T	Yes
Environment	Based on: AAR S5703 Railroad Electronics Environmental Requirements MIL-STD-810E
UL	Compliant
RoHS	RoHS 3 Directive 2015/863 Compliant
Conflict Minerals	Conflict Mineral directives

Reliability

Annual Failure Rate (AFR)	≤ 0.5%
Highly Accelerated Life Test (HALT)	Qualmark HALT Testing Guidelines, Document 933-0336, Rev. 04
Reliability Assessments	Conducted

Dimensions & Weight

Enclosure Material	Polycarbonate Lexan 9330, white
Solar Panel Window Material	Polycarbonate transparent
Dimensions	~43mm x 110mm x 490mm
Weight	~1150gr



Battery Life Time Table

TX / 24Hrs	Backup Battery Lifetime (months) (No sunlight)	Backup Battery Lifetime (years) (Solar PVOUT=1700)	Solar Power Only
96	3	1	Once the battery is drained, the solar panel alone can support up to ~10 Tx/day.
48	6	2.2	
24	11	5	
12	20	10	
8	28	10	

The calculations are based on various parameters, while under typical average conditions.

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