

# SISLOVE

SISTEMAS DE LOCALIZACIÓN DE VEHÍCULOS

## Cellocator™ CelloFamily

**Cellocator CelloFamily** is a new innovative family of products offering enhanced fleet management, vehicle security and safety services, as well as additional advanced Telematics applications. The first two product family members introduced are:

**Cellocator Cello-F** - For Fleet Management Services

**Cellocator Cello-R** - For Vehicle Security and Stolen Vehicle Recovery Services



### **Cellocator Cello-F**

#### **Fleet Management Services**

Cellocator Cello-F offers enhanced functionality and performance for fleet management and AVL services, as well as other advanced Telematics applications in the areas of journey and driver management, location and communication management for fleet owners and managers, service companies, insurance companies, car manufacturers and more. Some of these applications include route planning, vehicle access control, and event prioritization for distress situations. In addition, Cello-F is integrated with variety of 3rd party accessories such as Garmin terminals, 'handsfree' voice kit, fuel sensor, car alarm system, driver identification devices and many more.

Cello-F is an innovative all-in-one GPS-GPRS device, equipped by built in quad band GSM/GPRS modem, SiRF III GPS engine, powerful ARM7 based CPU and 3D accelerometer. It is compatible with any road vehicle type and fully certified to meet automotive, radio and safety standards in Europe and North America.

### **Cellocator Cello-R**

#### **Vehicle Security and Stolen Vehicle Recovery Services**

Cellocator Cello-R incorporates all of the Cellocator Cello-F features, as well as additional features, for offering an enhanced Vehicle Security and Stolen Vehicle Recovery Services. Both Cellocator Cello-F and Cellocator Cello-R provide state of the art event-based logic, configurable and flexible I/O settings for any type of common signal interfaces and advanced, cost effective and reliable OTA communication capabilities. The unit's internal memory allows logging of more than 9K full status events and up to 100 Geo-fences and waypoints. In accordance with Cellocator's commitment to exceptional serviceability and maintainability Cello-F & Cello-R are fully integrated with Cellocator's OTA management SW - Cellocator+™. The embedded mechanism of periodical (or by request) communication with the maintenance server, enables intuitive remote configuration update and firmware upgrades upon request as well as monitoring of the health status of a device across customer's accounts.

## FEATURES

### Journey and Driver Management

**Vehicle Access Control:** An iButton™ or any other compatible device, such as keypad and contactless proximity card, is used to monitor driver's identity. The Cello-F unit generates appropriate messages to report driver verification status. An optional starter interrupt can be used to immobilize the vehicle until the driver is authorized. An external buzzer can be activated as a reminder for driver authorization and feedback on a successful authorization process.

**Built in Car Alarm System (\*Cello-R feature):** The built in alarm system supports various alarm states such as armed/unarmed, garage mode and more. The unit's output can trigger the car sirens, lights and car immobilization.

**Trip Data Reporting:** The standard trip data recorded includes: trigger of event, date and time, location with its validity status, total vehicle distance, momentary speed or maximum since the last report speed, vehicle's internal batteries measurement, internal battery temperature and charging status, driver ID, and unit IO status, such as RPM and fuel level. The unit can maintain a log of up to 9k full time stamped location events when the engine is off.

**Violations Monitoring:** The standard monitoring of violations events includes: start and stop driving, time and distance reports, over speeding, over revving (RPM), harsh braking, rapid acceleration, excessive idling and violation of geo-zones.

### Location Management

**Online or Offline tracking:** Uploading generated events in real time as they are generated, or offline, by the end of the day or by command.

**Curve smoothing:** Tracking the vehicle's location whenever it performs turns- in order to fit the logged route to the map in an optimal way. Traffic compression for this type of traffic can be activated.

**Manage Locations:** Units can be programmed with 100 rectangular Geo Zones, which can be managed in separate or combined manner. The geo-Zones can be configured as forbidden, only-enabled zone, modem disabled and more. A violation of zone might cause output activation, and each zone is equipped by validity time.

**Route Planning:** Programming the unit with 100 rectangular way-points, which are passed in specific times, otherwise the unit will generate an alert.

**Real Time Status request:** Querying the Cello-F unit status at any given time, through SMS or GPRS.

**Driver Privacy:** Providing the driver with the option to mask tracking capabilities in order to maintain privacy during private trips.

### Communication

**Communication Methods:** The units include a GSM/GPRS modem, allowing communication over TCP/IP or UDP/IP with auto-switching to SMS, which can also be configured to be the primary mode of communication.

**Voice Calls:** Cello-F unit supports hands free kit, enabling to receive voice calls from any number and initiate voice call to central control.

**Event prioritization:** Priorities can be assigned to each event, so that distress events are immediately delivered using the first available communication channel.

**GSM operator management:** Selecting preferred and forbidden GSM operators for communication cost optimization.

**Band control:** Allowing presetting preferred GSM band and GPRS authentication method in order to speed up dial up time.

**Traffic auto-optimization:** Auto-adjusting event generation frequency as a function of velocity, serving GSM operator and GSM status in order to optimize memory usage and cost of traffic.

**Jamming Detection and Reaction:** Embedded capability to monitor and detect GSM/GPRS jamming attempts and corresponding local reaction to avoid vehicle theft or drawing environment's attention.

### Installation & Maintenance

**Covert installation:** The unit's small size and monoblock structure allows effective covert installation in various places in the vehicle.

**Minimal installation option:** The device can generate start/stop ignition events based on the 3D accelerometer's movement detection, using this feature, self OBDII-based, or 2-wire installation is enabled.

**Maintenance Server Cello:** F supports periodical and by command connection to a separate server for maintenance purposes, configuration and firmware update, health status monitoring etc.. Maintenance is enabled thru the Cello-R+ software package.

**OTA (Over-The-Air) programming:** All parameters are fully configurable from remote.

**OTA (Over-The-Air) firmware upgrade:** Full remote firmware upgrade for efficient and faster customer support and enhancement of service offering.

**Various Compatible Accessories:** Additionally, Cello-F supports numerous proprietary and 3rd party accessories to meet a variety of Telematics needs. Accessories supported include:

- Temperature, Fuel, and Accident sensors
- Driver Identification Dallas key and keypad
- Distress / Assistance button
- MDT for bi-directional communication with the driver
- Full integration with Garmin™ PND
- Bluetooth adaptor

## TECHNICAL SPECIFICATION

### Communication

GSM Modes	GPRS class 10, PDU SMS
Bands	Quad band: 850, 950, 1800, 1900MHz
Power output	2W, 1W
SIM	Internal, replaceable, remote PIN code management
Antenna	Internal, quad band GSM antenna
Packet data	TCP/IP, UDP/IP
SMS	PDU, text SMS for data forwarding

### GPS

Technology	Chipset: SiRFIII GSC3F/LP single chipset
Sensitivity (tracking)	-159dBm
Acquisition (normal)	Cold <42Sec, Warm<35Sec, Hot<1Sec
Antenna	On board, internal patch antenna Optional external Active antenna (2.85V ± 0.5%), automatic switching, standard SMA connector

### Inputs & Outputs

Inputs	1 internally pulled down input dedicated for Ignition switch.  3 internally pulled up general purpose inputs with assignable functionality and configurable polarity - 0V < V <sub>IL</sub> < 0.25V ; 0.25V < V <sub>IH</sub> ≤ 30V
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2 configurable inputs capable to serve as:

**Frequency counters** - Configurable resolution; Up to 5kHz input signal; Signal level (3V < V<sub>in</sub> ≤ 30V) Accuracy ±2%

**Analog inputs with variable resolution** - 8bit, adapted to 0-2.5V signal, resolution 20mV, accuracy ±20mV; 8bits, adapted to 0-30V signal, resolution 100mV, accuracy ±100mV

**Discrete pulled up** - 0V < V<sub>IL</sub> < 0.25V; 0.25V < V<sub>IH</sub> ≤ 30V

**discrete wet** (configurable levels)

Outputs	5 general purpose open drain outputs (250mA max) with assignable functionality
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### Interfaces

Voice interface	Cellocator HF compliant  Full duplex Echo cancelation Noise suppression Spy listening option Auto-answer option Volume control by single button or two buttons Distress voice call and plain voice call generation
COM (RS232) port	Selectable baud rate (9600 or 115000bps) - True RS232 levels; 8 bit; 1 Stop Bit  No Parity MDT Interface Garmin™ Interface PSP™ (Car Alarm) Interface Cellocator Serial Protocol Transparent data mode Configuration Firmware upgrade
Debug port (RS232 out)	External Monitoring of Modem-CPU dialog

Debug port (RS232 out)	115000bps True RS232 levels 8 bit 1 Stop Bit No Parity
Deb1-Wire™ (Dallas port)	DS1990A compliant Driver management Car Alarm Authorization
Accelerometer	3D, 2g/8g range, <70mg resolution, I <sup>2</sup> C interface
Connectors	20pin Molex, Automotive SMA switch for optional external GPS antenna

### Power

Input voltage	7-32VDC
Average Current consumption	<b>Normal:</b> 40mA <b>Economic:</b> 23mA <b>Hibernation:</b> <2mA <b>Shipment (Off):</b> <20uA (Internal Battery)
Internal Battery	Li-Ion Polymer, 3.7V, 900mAh, rechargeable Embedded NTC for temperature controlled charging Operating Temperature: -20 (65% charge) to 60°C
Internal Battery	<b>Battery Monitoring:</b> Temperature (NTC) & voltage <b>Autonomy:</b> Up to 200 Tx @ 1Msg/ min @ 25°C. <b>Protections:</b> over current, overcharge and over discharge

### Vehicle environment immunity

Immunity	Compliant with ISO 7637 test level #4 (in accordance with e-mark directive)
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### Environment

Temp, operating	-30°C to +70°C full performance -40°C to +85°C – degraded communication
Temp, storage	-40°C to +85°C
Humidity	95% none condensing
Protection	IP40
Vibration, Impact	ISO 16750
Mounting	Tie-wraps and/or two sided adhesive

### Certifications

FCC	Part 15 Subpart B, part 22/24 compliant
CE	CE EMC & R&TTE according to 89/336/EEC or 1999/5/EC CE Safety EN60950-1:2001+A11:2004 Automotive Directive 2004/104/EC (E-Mark)
IC	Industrial Canada
PTCRB	TRP, TIS, Spurious and harmonics emission

### Dimensions & Weight

Dimensions	91x73x23mm
Weight	110gr