

Tracking Hardware UK Ltd

CR-400™

Next Generation LTE-based Fleet Management Device
with BLE Connectivity & LED Indicator

The Cellocator CR-400 is Cellocator's next generation fleet and security management device, and is based on the LTE Cat M1 network with 2G fallback.

The CR-400 is a high quality, yet cost-effective and easy to install device, with built-in BLE connectivity and LED indicators. It is equipped with a large rechargeable backup battery (1000mAh) and includes basic driver behavior capabilities and built-in motion sensors that enable movement and towing detection to ensure improved compliance with vehicle security requirements.



Highlights

- LTE Cat M1 network with 2G fallback
- Built-in BLE connectivity
- 2 LEDs for Cellular/GNSS installation validation indication
- Basic driver behavior capabilities
- Large backup battery with extended capacity of 1000mAh
- Easy to install
- Memory that can store up to 7,000 logged events in offline scenarios
- IOs:
 - Ignition switch input
 - 2 programmable Inputs (digital/analog/frequency counter)
 - 2 programmable I/O (dry contact/output)
- RS-232 serial port for accessories/programming
- 1-wire interface – Dallas port (driver ID/trailer ID and for 1 external temperature sensor)
- Built-in motion sensor for movement & towing detection
- Additional advanced capabilities, including:
 - Crash detection
 - Up to 100 Geo-Fences
 - GNSS (GPS + GLONASS) Geo Location
 - Cell-ID based geo location (alternative to GNSS when not available)
 - In cabin speed alert (activation of one output if speed limit is exceeded)
 - Up to 100 Roaming list
 - Usage / frequency counters
 - Curve smoothing
 - Gradual immobilizing as one of the outputs
 - Basic Satellite activation

Use Cases



Fleet Operators

The CR-400 can monitor driver behavior (including harsh acceleration, harsh braking, harsh turning, over speeding and accident detection), enabling fleet operators to increase driver safety and operational efficiency, in turn helping to significantly reduce costs.



Driver Identification

The driver ID of CR-400, in conjunction with the driver ID accessories (Dallas Keys, Keypad and Proximity Reader among others), can be used for vehicle immobilizations and driver-recognition in security and fleet services applications.



Stolen Vehicle Recovery (SVR)

The CR-400 includes a built-in motion sensor which recognizes movement and towing attempts, providing alerts if the vehicle is detected to be moving at unscheduled times. In addition, different types of alerts can be generated if a vehicle leaves a certain geo-fence without authorization. These alerts enable the relevant security teams to react to ensure stolen vehicle recovery (SVR).



Fuel Management

Online monitoring of fuel consumption using the CR-400 device and fuel solution accessories (fuel probe sensor, fuel level sensor and fuel cap protector) – including the level, the volume, time and location of refueling and draining – can help to greatly reduce fuel usage and prevent fuel theft.

CR-400 Specifications

Cellular Communication

Supported Technologies & Bands	LTE CAT-M1 with 2G fallback, worldwide support CAT-M1: B1, B2, B3, B4, B5, B8, B12, B13, B18, B19, B20, B26, B28 2G: B2 (1900), B3 (1800), B5 (850), B8 (900)
Data Rates	LTE CAT-M1: uplink up to 375 kbps, downlink up to 300 kbps 2G (EGPRS): Uplink up to 236 kbps, Downlink up to 296 kbps
Maximum RF Power Output	(LTE) CAT-M1: 23±2 dBm (Class 3) GSM850, GSM900 - GPRS: 33±2 dBm (Class 4) GSM850, GSM900 - EDGE: 27±2 dBm (Class E2) DCS1800, PCS1900 - GPRS: 30 ±2 dBm (Class 4) DCS1800, PCS1900 - EDGE: 26 ±2 dBm (Class E2)
SIM Card	Internal Nano SIM, eSIM is applicable per specific order customization
Antenna	Internal, Multi-band GSM antenna
Packet Data	TCP/IP, UDP/IP
SMS	PDU

Interfaces

BLE	Secure BLE 4, wireless connectivity with PC and smartphones BLE 5 ready (future firmware update)
COM Port (RS-232)	Wired serial communication Selectable baud rate (9600 bps or 115200 bps); 8-bit, 1 stop bit, no Parity Can be used for configuration update / firmware upgrade / accessories
1-Wire™ (Dallas port)	DS1990A, DS1971 compliant for driver management Extended bus current source with 7mA driving capability DS18B20 compliant for temperature sensors

GNSS (GPS+GLONASS)

Sensitivity (Tracking)	-161 dBm
Acquisition Average TTFF	Cold: 32 seconds / Warm: 21 seconds / Hot: <1 second
Antenna	Internal antenna

Inputs / Outputs

2 configurable IOs	Dry contact input: contact Sink to GND. Output: open Drain Sink Output (250 mA max)
Ignition Input	Ignition switch signal analog input: *0–32V range
2 configurable IOs	Analog input: 0-30V DC range Dry contact input: Sink to GND Digital "wet" input: 0-30V VDC range, configurable threshold Frequency counter: 0-5kHz range @ configurable amplitude
2 Internal Analog Inputs	For Vehicle power voltage, Internal regulated and system power voltage monitoring

Accelerometer

Internal	3D, 16g range, 12-bit representation, 1mg resolution
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Indications

LED Indicators	GNSS Status LED & Cellular Connectivity Status LED Operates only during installation and shuts off after installation completion
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Connectors

Single connector	10 pins connector
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Power	
Input Voltage (Vehicle Power)	*9-32 VDC
Average Current Consumption, 12V Power Installation	Normal (during idle with BLE on): 19mA Hibernation with BLE on: 3.3mA Hibernation with BLE off: 2.1mA Shipment (Off): <20uA (Internal Battery)
Internal Backup Battery	Li-Ion Polymer, 3.7V, 1000mAh, rechargeable Embedded NTC for temperature controlled charging Operating Temperature: -20°C (65% charge) to +60°C Charging Temperature: 0°C to +45°C Battery Monitoring: Temperature (NTC) & Voltage Autonomy: 140 messages from a fully charged battery in a TX Rate of once per 5 Minutes @ room temperature Protections: over current, overcharge and over discharge
Vehicle Environment Immunity	
Immunity	Compliant with ISO 7637 up to test level #4 (in accordance with E-mark directive)
Environmental Conditions	
Operating Temperature	-30°C to +70°C full performance (external power)
Storage Temperature	-20°C to +45°C
Humidity	95% non-condensing
Protection	IP40 (upgradable to IP66 with added protector accessory)
Climatic, Vibration, Impact	ISO 16750
Vehicle Installation Methods	
Mounting	Tie-wraps and/or double-sided adhesive tape
Certifications	
FCC	Part 15 Subpart B, part 22/24 compliant
PTCRB	All applicable bands
CE	Radio Equipment Directive (RED) 2014/53/EU CE EMC Article 3.1(b) Electromagnetic Compatibility CE Radio Article 3.2 Effective Use of Spectrum CE Safety Article 3.1(a) Health & Safety Automotive Directive 2004/104/EC (E-Mark)
IC	Industrial Canada
1-wire Temperature Sensor Ratings EN12830	Suitability: T Climatic environment: <ul style="list-style-type: none"> • W/o CR Protector – B • With CR Protector – D Accuracy class: <ul style="list-style-type: none"> • -10°C to +85°C ± 1°C • < -10°C, > +85°C ± 2°C Measurement range: -55°C to +125°C
Environmental Protection	
RoHS	Directive 2011/65/EU, including Directive (EU) 2015/863 amendment
Conflict Minerals Law	Production Conformity with U.S. Conflict Materials provisions of the Dodd-Frank Wall Street Reform and Consumer Protection Act, HR 4173, Section 1502 (Conflict Minerals Act)
Dimensions and Weight	
Dimensions	90.8 x 70.5 x 22.9 mm
Weight	130gr (unpacked, without harness, battery included)
Harness	
P/N:711- 00412	Full harness, including RS-232 serial communication plug

* It is possible to order a higher voltage model, in which the Power Input voltage ranges specified above (9-32V & 0-32V DC, Per Power & Ignition) can be customized to the ranges 9-48V & 0-48V DC. Note that the 9-48V DC Vehicle Power Input does not conform with E-Mark requirements and is intended to be connected to Pure Electrical Vehicles only (non-hybrid/internal combustion).