



Cellocator Division
Pointer Telocation Ltd.

CELLO-IQ

HIGH-END DRIVER / FLEET SAFETY AND ECO-DRIVING MATE

CELLO-IQ is a driver behavior monitoring and Eco driving application, designed to reduce fleet operating costs, improve productivity and increase fleet safety. It is one of a very few systems in the market that provide a complete real-time, on-board driver scoring solution ready for integration with any TSP's or enterprise SW platform with minimal integration and development effort and shortest possible TTM.

The Cello-IQ device processes and interprets vehicle dynamics and driving patterns into safety scores reflecting the driver's relative level of risk to be involved in a road accident and Eco score, reflecting relative fuel efficiency and emission footprint.. Cello-IQ is available in two variants, Cello-IQ 50, the premium solution, and Cello-IQ 40 – the entry-level solution.

Cello-IQ Applicable Target Markets

- Fleet Operators
- Vehicle Insurers
- Public Transportation
- Vehicle Owners
(For teen monitoring)
- Leased / Rental Car Companies



Driving Behavior
Management



E-Call & Emergency



On-board Trip



Driver Coaching



POINTER



MAIN FUNCTIONS

- **Driving Behavior Management** - Detects, processes, logs and reports a wide set of events and/or raw data concerned with hazardous or aggressive driving behavior ("Safety" features).
- **E-Call & Emergency Data Recording (EDR)** - Detects, logs, reports and uploads accident events and accident raw data for later crash event reconstruction on the server side.
- **Eco Driving Management** - Detects and reports events which feature uneconomical and environment-unfriendly driving in terms of fuel consumption, emission and accelerated wear and tear (brakes, axles, engine, etc. – "Eco" features).
- **On-board Trip Level Scoring** - Provides trip statistics information, which includes Eco scoring and Safety scoring based on the information gathered and processed on-board during a trip.
- **Driver Coaching** - Provides continuous real time, visual and/or audible feedback to the driver, via a dedicated "Driver Feedback Display" (DFD), regarding the risk level of the driver's driving



Cello-IQ SYSTEM FEATURES

DRIVER BEHAVIOR AND ECO DRIVING MANAGEMENT - THE DETECTION, ONBOARD PROCESSING, LOGGING, SCORING AND REPORTING OF A WIDE SET OF MANEUVERS REPRESENTING HAZARDOUS AND/OR WASTEFUL DRIVING:

- Wide set of managed driving maneuvers: accelerations, turns, braking, over speeding, idling, unsafe lane change, wrong gear handling, off-road driving and more.
- In-vehicle maneuver analysis across multiple parameters such as length, maximum and average accelerations and speeds, speed delta, etc.
- On-board classification of a detected maneuver into 3 configurable risk levels: Green, Yellow and Red.
- On-board trip safety - scoring taking into account a weighted influence of all the detected maneuvers on the trip.
- On-board trip Eco-driving - involving parameters which highly affect fuel consumption, emission and wear and tear factors.
- Real time driver feedback, including visual (LEDs, icons) and audible (buzzer or recorded voice) options for coaching and mentoring purposes.
- Flexible and configurable maneuver and trip scoring logic (severity levels, relative contribution of various maneuver

types, switchable detection, logging, raw data aggregation and transmission of each maneuver type independently).

- On-board scoring calculation includes presets for various vehicle types (Private, LCV, MCV/Bus, HCV).
- Compliance with ongoing fine tuning of thresholds and dynamic ranges of the scoring algorithms over time.



CRASH DETECTION - EMERGENCY DATA RECORDING AND RECONSTRUCTION, INCLUDING:

- Configurable length of pre and post accident buffers.
- Up to 100Hz 3D Acceleration sampling rate ($\pm 8g$) +1PPS GPS stamp.
- Proven survivability in up to 50g impact conditions
- Proprietary e-Call - with In-band compliance (infrastructure).
- Self automatic calibration - resulting in an easy installation.
- Extended memory capacity - enables more than 2 weeks of operation outside coverage.
- Independent communication socket for the CSA - allowing modular design of the backend.
- Modular CSA protocol - for best message-structure definition flexibility and easy integration

Cello-IQ 50 vs. Cello-IQ 40

Feature	Sub Feature	Cello-IQ	
		Cello-IQ 40	Cello-IQ 50
Accelerometer based Ignition sense		✓	✓
Crash Notification		✓	✓
Maneuvers	Speeding		✓
	Harsh Acceleration	✓	✓
	Harsh Brake		✓
	Harsh Turn		✓
	Turn & Acceleration	–	✓
	Turn & Brake	–	✓
	Off road	–	✓
	Excessive RPM	Events only	✓
	Slalom	–	✓
	Crash	✓	✓
E-Call		✓	✓
EDR		–	✓



Real time driver feedback, including visual and audible options, for coaching and mentoring purposes.



CELLO-IQ TECHNICAL SPECIFICATIONS

Communication	
GSM Modes	GPRS class 10, PDU SMS
Bands	Quad band: 850, 900, 1800, 1900MHz
Power Output	2W, 1W
SIM	Internal, replaceable, remote PIN code management
Antenna	Internal, multi band GSM antenna
Packet Data	TCP/IP, UDP/IP
SMS	PDU, text SMS for data forwarding
GNSS	
Technology	STM STA8088 Chipset
Sensitivity (tracking)	-162dBm
Acquisition (normal)	Cold <35Sec, Warm<35Sec, Hot<1Sec
Internal Antenna	On board, internal patch antenna
External Antenna (optional)	External Active antenna (2.85V \pm 0.5%), SMA connector. Firmware controlled receiver antenna source selection.
Inputs and Outputs	
Inputs	<p>1 internally pulled down input dedicated for ignition switch</p> <p>3 internally pulled up Discrete Dry inputs with assignable functionality and configurable threshold for logical high and low states.</p> <p>2 configurable inputs capable to serve as:</p> <p>Frequency counters - configurable resolution; Up to 5kHz input signal; Signal level (3V < Vin 30V); Accuracy \pm2%</p> <p>Analog inputs with variable resolution - 8bit, adapted to 0-2.5V signal, resolution 20mV, accuracy \pm20mV; 8bits, adapted to 0-30V signal, resolution 100mV, accuracy \pm100mV</p> <p>Discrete Dry – configurable threshold for logical high and low states.</p> <p>Discrete Wet - configurable threshold for logical high and low states.</p>
Outputs	5 general purpose open drain outputs (250mA max) with assignable functionality.
Interfaces	
Voice Interface	<p>Cellocator HF compliant</p> <p>Full duplex</p> <p>Echo cancelation</p> <p>Noise suppression</p> <p>Spy listening option</p> <p>Auto-answer option</p> <p>Volume control by single button or two buttons</p> <p>Distress voice call and plain call generation</p>



COM port (RS232)	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 update Firmware upgrade
Debug port (RS232 out)	External Monitoring of Modem-CPU dialog 115000bps True RS232 levels 8 bit, 1 Stop Bit, No Parity
1-Wire™ (Dallas port)	DS1990A, DS1971 compliant DS18B20 compliant Extended bus current source with 7 mA driving capability Driver management Car Alarm Authorization
Accelerometer	3 3D, ±2g/8g range, 12 Bit representation, 1mg resolution, I2C interface D, ±2g/8g range, 12 Bit representation, 1mg resolution, I2C interface
Connectors	20pin Molex, Automotive SMA switch for optional external GPS Antenna
Power	
Input Voltage	7-32VDC
Average Current consumption	Normal: 45mA Economic: 16mA Hibernation: <2.1mA Shipment (Off): <20uA (Internal Battery)
Internal Battery	Li-Ion Polymer, 3.7V, 900mAh, rechargeable Operating Temperature: -20 (65% charge) to 60°C Battery Monitoring: Temperature (NTC) & voltage Autonomy: Up to 200 Tx @ 1Msg/min @ 25°C Protections: over current, overcharge and over discharge
Environment	
Temp, operation	-30°C to +70°C full performance -40°C to +85°C – degraded communication
Temp, storage	-40°C to +85°C
Humidity	95% non-condensing IP40 ISO 16750 ISO 7637 Test level 4 (e-mark directives compliant) Tie-wraps and/or two sided adhesive
Ingress Protection	IP40
Vibration, Impact	ISO 16750
Vehicle power transient	ISO 7637 Test level 4 (e-mark directives compliant)
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

DFD SPECIFICATIONS

Interfaces	
COM1 Port (RS232)	True RS232 Levels 8 bit; 1 Stop Bit; No Parity, 115200 BPS. Proprietary Serial Protocol
Connectors	4 pin connector: GND, Power Supply, RS232 TX, RS232 RX
Power	
Input Voltage	7-32VDC
Power consumption	Hibernation: 760uA at 12 V Operational : up to 5.4 W assuming all LEDs are illuminating
Display	
Led Array	12 white LEDs
Audio	
Recorded messages	128Mbytes SDCARD holding voice recordings.
Loudspeaker	1W
Recording Format	Sampling rate: 16Khz Encoding: Signed 16 Bit PCM RAW data file format.
Environment	
Temp, operating	-15°C to +65°C full performance
Temp, storage	-20°C to +85°C
Humidity	95% non condensing
Protection	IP40
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
Mechanical Attributes	
Dimensions	~ 73 x 47x 18.6 mm
Weight	~ 62 grams
Stand	Manually adjustable view angle with Screw.
Mounting	Double-sided adhesive tape or screws
Cable	4 wires, 28 Gauge, 30 cm long.
Connector	4 Pins, 2.54 mm Pitch, Single row

HOW TO PURCHASE

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