

> QinetiQ Ocellus T100e

High Performance GPS Tracking for Fleet Management

- > **High sensitivity GPS** integrated for installation without external antennas
- > **GSM/GPRS tri-band communications** for economical global operation
- > **Rechargeable internal battery** enables 'fit and forget' applications, or extended long term operation when disconnected from power
- > **Rugged enclosure and connector system** withstands extreme environmental conditions found on commercial vehicles
- > **Compact**, self-contained and easily installed, with internal antennas and four bolt mountings
- > **Low installation costs**, high reliability and no requirement for any additional enclosure

Ocellus T100 is a High Sensitivity GPS/GPRS fleet management / tracking product, suitable for tracking trailers and commercial vehicles. High Sensitivity GPS enables T100 to be installed without external antennas, under the trailer in a convenient location for the installer, e.g. adjacent to a junction box. This dramatically reduces the installation cost of the product. GPRS provides low cost data communications over the GSM network, much reducing the cost of ownership compared to systems that rely on SMS messaging.



Ocellus T100 is designed to be powered by the vehicle to which it is connected. If installed on an articulated trailer for example, the T100 internal battery continually charges while the tractor unit is connected; when the trailer is disconnected from power the unit detects this and switches to a power-saving mode to extend its battery life.

The unit detects its motion state and determines journey start / stop and movement, enabling the automated generation of management reports from web tracking services. The rugged enclosure and connector system, integrated antennas and rechargeable battery make Ocellus T100 easy to install and highly reliable by removing the need for a complex wiring installation, or replacement of batteries.

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Applications

- > **Fleet Management** – easy to install on vehicles and trailers, and designed for tracking in difficult environments, eg. when under a vehicle. May be connected to the vehicle ignition line (optional) to provide management reports on engine run time. Alternatively, journey reporting based on motion sensor activity, and GPS verification of motion, provides accurate journey information without connection to the vehicle ignition.
- > **Supply Chain Security** – connect remote sensors to T100 digital inputs to obtain event reports / alarms, eg. door opened or other sensor activated outside the intended (geofenced) area.
- > **Plant Tracking** – ideal for tracking heavy construction vehicles and machinery, where rugged construction, robust fixings, high environmental specification and simplicity of installation are paramount.
- > **Asset Tracking** – may be used to track valuable goods in the supply chain; the rugged construction of T100 makes it particularly suitable for building into custom shipping containers and pallets.

Remote Configuration

Ocellus T100 is remotely configurable to suit the user's requirements, through a web-based QinetiQ tracking service interface, or tracking services provided by third parties.

Example Device Settings

- > **GPRS and SMS Credit** – supports the limiting of number of reports the unit is permitted to send over either GPRS or SMS, enabling low cost operation over GPRS, or capping of tracking expenditure.

- > **Motion Sensor Sensitivity** – permits the setting of the time period over which the motion sensor should detect motion in order for Ocellus to interpret disturbance as motion, thus avoiding false alarms.
- > **GPS Throttle** – a configurable setting that defines how hard the GPS engine should work to obtain a position fix, enabling the user to prioritise between extended battery life and improved position availability.

Position and Information Reports

S100 may be configured to provide combinations of the following report types:

- > **Go** - when a unit starts to move.
- > **Stop** - when a unit stops moving.
- > **Periodic** - while stationary (with reporting intervals configured as required), e.g. for 'confidence' reports.
- > **Motion** - at timed intervals while moving, with reporting intervals configured as required (e.g. every x minutes).
- > **Ignition On / Off**
- > **Input (1-6) condition**, eg. door opened / ignition on/off / machinery operating or stopped etc.
- > **Condition / alerts** from a device connected to the serial port*.

* Requires consultation with QinetiQ, to implement the monitoring interface between Ocellus and connected equipment.

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Additional Parameters Available With Reports

- > **Altitude**
- > **Speed**
- > **Maximum Speed** – provides a report on the maximum speed travelled since the last report.
- > **Horizontal and Vertical Accuracy Estimates**
- > **Course Over Ground** – provides heading information, enabling the direction of travel to be interpreted by the tracking service provider (eg. To show a direction arrow on the map).
- > **Battery % Remaining** – allows remote monitoring of the unit's battery condition. Also allows the tracking service provider to send the user an alert if the battery level drops below a pre-set level.
- > **Report Interval** (ie. time elapsed since the last report).
- > **Seconds in Motion** – since the last report.
- > **Power connected** / not connected.

Journey Reporting

Journey Reports are provided by the web tracking services which support Ocellus. Journey reports are created by interpreting Go/Stop or Ignition On/Off pairs. By setting up the tracking system in conjunction with geofences, this enables important journey and delivery information to be generated.

Geofencing

- > **Geofencing** is enabled by the web tracking services which support Ocellus.

Alarms

- > **Alarms** are alerts sent to the user by the tracking service. These can be created by the tracking service provider, based on information provided by Ocellus. Examples include:

- Geofence breaches
- 'Battery low' alarms
- Speeding
- Input (1-6) triggered alarms
- Alarm conditions triggered by a device connected to the serial port.

Inputs / Outputs

- > **6 digital inputs**
 - 3 active high**
 - 3 active low**
- > **3 digital outputs*****
- > **RS232 serial port**
- > **2 separate power inputs**

** One of each of active high / active low inputs is connected by the Standard Cable Harness, and two of each are available using the Expanded Cable Harness. Should more inputs be required (up to the maximum 6 available, then a custom interface cable may be ordered).

*** In standard T100 configuration, these outputs are set to activate LED indicators on the service tool. Should there be a requirement for the activation of an externally connected device, this can be achieved by software re-configuration in consultation with QinetiQ.

Connector System

Ocellus T100 uses an 18-way Cinch 1.5mm Sealed Header System. This connector system provides extreme environmental protection and rugged connection to vehicle power and external sensors.

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Ocellus T100e Specification

GPS PERFORMANCE (12 CHANNEL)	RF Reception Sensitivity:	-186 dBW tracking -184 dBW acquisition
	Signal Acquisition Hot: Warm: Cold: Re-acquisition	<1 sec <38 sec <45 sec <0.5 sec
ACCURACY	Position: Outdoor/Indoor Velocity (Outdoor):	<5m / <50m typical <0.05ms-1
GSM/GPRS PERFORMANCE	T100e: GPRS Class 10: Point-to-point SMS: Text and PDU mode SMS GSM phase 2/2+ compliant Output Power – GSM850/900 Output Power - GSM1800/1900	900/1800/1900 MHz Max 85.6 kbps MO and MT 2W 1W
POSITION FIXES STORED	(In Internal Memory)	Up to 4,000 positions
PHYSICAL	Ocellus T100 Dimensions: Weight: Ocellus T100 Case:	150mm (L) x 153mm (W) x 55mm (H) (approx) 360g 30% GF Polymer / Silicone Rubber Seal
ENVIRONMENTAL	Operating / Storage Temp: Max Velocity / Altitude: Max Acceleration / Jerk: Dust / Water Ingress Protection: Chemical Resistance:	-20°C to + 60°C / -40°C to +85°C 515ms-1 / 18,000m Complies with DEF STAN 00-35 (Part 3) Sealed to IP65, IP66, IP67 and IP69K Resists salt spray and most fluids used in industrial applications
POWER	Internal Battery Charging Requirements:	Lithium Polymer 9-32V, 1.75W max.
POWER EFFICIENCY	Period of autonomous operation without connection to vehicle power:	*15-30 days (reporting 100 times per day) *3 years (reporting once a day) <i>* Depending on installation conditions; these figures are for guidance only.</i>
ALARMS	Battery Low, Geo-Fencing, Input-triggered Alarms	Enabled by web tracking service
INTERFACES	Inputs: Outputs: Serial port: Power input: Connector: Standard Cable (Part No. QP1011-714): Web Interface:	6x digital inputs (3 active high, 3 active low). 3x digital outputs. RS232 2 separate inputs (9 – 32V DC) 18-way Cinch 1.5mm sealed header system. 5 core cable, 2m long provides: 2 separate power inputs (9-32V); Digital Input 1 (active high, eg. ignition sense); Digital Input 4 (active low, eg. door open sensor); Ground. <i>(N.B. Different cable lengths and input configurations available to order)</i> Enables remote monitoring and configuration of Ocellus over the web
OPTIONS / ACCESSORIES	Enhanced Cable (2x 5 core, Part No. QP1011-696): Service Tool: 12V Universal Mains Charger: Header Removal Tool: Blanking Plug (for fit and forget applications):	2x 5 core cables, 2m long, as Standard cable, plus additionally: - Digital Input 2 (active high) - Digital Input 5 (active low) - RS232 serial port (2 cores) - Ground. <i>(N.B. Different cable lengths available to order)</i> Part No. QP1013-344 Part No. QP1013-347 Part No. QP1013-343 Part No. QP 1013-342

This specification is subject to change without notice.