

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.

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.



Ocellus T100

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.

Data Sheet

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, coventness 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 / Upgrade

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.

T100 firmware may be upgraded remotely 'over the air' via GPRS.

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

T100 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 (1-4) 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.*

Data Sheet

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.
- T100 supports onboard geofences and web-based geofences.

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:
 - Geofence breaches
 - 'Battery low' alarms
 - Speeding
 - Digital input-triggered alarms, eg. trailer hook/un-hook
 - Alarm conditions triggered by a device connected to the serial port.

Inputs / Outputs

- **4 digital inputs**
 - 2 active high**
 - 2 active low**
- **Up to 3 digital outputs*****
- **RS232 serial port**
- **Power input**
- **1-wire Driver ID reader interface, LED indicator output**

**** In standard T100 configuration, one output is enabled, and the other two are set to activate LED indicators of GPS and GSM function on the service tool. Should there be a requirement for the activation of more than one externally connected device, this can be achieved by software re-configuration in consultation with QinetiQ.*

Connector System

Ocellus T100 uses an 18-way sealed connector system. This system provides extreme environmental protection and rugged connection to vehicle power and external sensors.

Data Sheet

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 12-32V, 1.75W max.
POWER EFFICIENCY	Period of autonomous operation without connection to vehicle power:	*10-16 days (reporting 100 times per day) * 3 – 4 months (reporting 10 times per day) *18 months (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: Driver ID: Serial port: Power input: Connector: Cables: Web Interface:	4x digital inputs (2 active high, 2 active low). 3x digital outputs. 1-wire Driver ID reader interface, LED indicator output RS232 12 – 32V DC 18-way sealed header system. 2-, 5-, and 10-core cable options, 2-10m long provide support for Power, Gnd, I/O's : <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	Cables, blanking plugs, interfacing and charging accessories are available to support T100 installations and operation.	Please contact us for further information.

This specification is subject to change without notice.

For more information please contact your local QinetiQ representative, or contact our central team:

Customer Contact Team - QinetiQ
Tel: +44 (0) 8700 100942