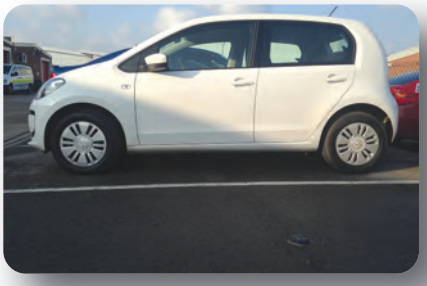


M300 Wireless Vehicle Occupancy Detection System

Highly accurate detection with robust communications

The M300 wireless occupancy detection system uses part embedded in-ground or surface mounted sensors to detect the occupancy of vehicles parked over them. The system provides an accurate, lower cost and easier to install alternative to other occupancy detection systems, many of which are overhead mounted, therefore not suitable for outdoor or surface only applications and would need costly cable ducting. Occupancy data and analysis is presented via our graphically rich cloud based parking management software providing visual mapped information, alerts, reporting and analysis.

COST EFFECTIVE, ACCURATE, OCCUPANCY DETECTION FOR A WIDE RANGE OF APPLICATIONS

The Golden River M300 Occupancy Detector range has been designed to accurately detect the presence of a vehicle in a defined zone including over prolonged occupancy. The M300 sensors feature both infra-red and magnetometer detection. The combined detection effectively detects a vehicle using a sophisticated algorithm to ensure detection is highly accurate in excess of 98%, reliable under all conditions and is unaffected by weather, dirt or leaf fall.

The M300 range is suitable for a wide range of applications, such as: car parking space occupancy, dynamic parking payment schemes, Emergency Refuge Areas, taxi ranks and monitoring 'No Parking' zones.

A WIRELESS ALTERNATIVE TO FIXED INFRASTRUCTURE DETECTION SYSTEMS

Unlike many occupancy systems that rely on overhead mounting, the M300 range of sensors wirelessly transmit their detection data in real time, via secure low power, bi-directional radio technology that utilises the mesh protocol with self-configuring communications ensuring the integrity of the system information at all times.

The wireless mesh system radically simplifies installation and eliminates time consuming and expensive slot cutting, trenching and ducting associated with deploying 'wired' systems.

The M310 Access Point feeds the information for analysis and display to the parking management software via either Ethernet (cabinet mounted) or GPRS (externally mounted) communications options available. The M310 Access Point is supplemented by the use of M315 Repeater Units to enable cost effective and reliable coverage over larger and more complex areas.

REAL TIME PARKING OCCUPANCY INFORMATION AND VARIABLE MESSAGE SIGN MANAGEMENT

Our software platform provides the parking occupancy data including user definable overstay alerts via an Interactive map facility for visual monitoring of parking areas and detector management along with data analysis and standard reports outputs. The software also allows the management of Variable Message Signs for both text and numeric based messages.

Alternatively the detection system is easily integrated into other parking management systems if required via REST or SOAP interfaces.

KEY BENEFITS

- Simple, low cost installation
- Readily scalable and upgradeable solution
- Real time, access anywhere, anytime of parking occupancy data to inform decision making
- Superior accuracy and reliability compared to other occupancy detection systems
- Suitable for on street, off street and multi storey parking installations

KEY FEATURES

- Unobtrusive and robust design with a number of installation options
- Combined infra-red and magnetometer dual detection to ensure highly accurate detection
- 98%+ accuracy in occupancy detection
- Battery powered with minimum 5 years battery life
- Wide operating temperature range (-40°C to +85°C)
- IP67 weather resistant detectors
- Web based Interactive map facility for visual monitoring of parking areas and detector management
- Flexible data reporting and sharing with other / existing management systems
- Supports real-time space availability confirmation via variable message signs

Golden River
Traffic Management Systems

M301 AND M302 SURFACE MOUNTED AND EMBEDDED OCCUPANCY SENSORS

M301 SURFACE MOUNTED AND M302 EMBEDDED

The M301 surface mounted and M302 embedded wireless occupancy sensors combine infra-red and magnetometer detection technology, using a sophisticated algorithm to ensure detection is highly accurate and reliable under all conditions, and is equipped with a low power secure radio transmitter.

The M301 sensor is packaged in a small hardened plastic IP67 rated enclosure for quick and easy surface installation in the parking bay.

The M302 sensor is packaged in a small hardened plastic IP67 rated enclosure part embedded into the parking bay with a smaller surface area than the M301 surface mounted sensor. The M302 is usually deployed where potential traffic levels are such that the sensor would be subject to increased vehicle wheel impacts.

The low power radio transmission technology combined with its integral high quality battery ensures an average operational life in excess of 5 years.

The M301 and M302 sensors features include:

- Quick and easy installation of the rugged compact sensor in a parking bay bonded to the surface (M301) or core drilled and resin bonded (M302).
- Replacement sensors can be simply re-installed by replacing only the sensor within the mounting ring (M301).
- Suitable for installation at both on street and off-street parking areas including multi-storey and top floor car parks.
- The M302 embedded sensor is unobtrusive, less susceptible to damage or theft.
- Dual detection technology to ensure highly accurate detection in all conditions.
- 2 way wireless communications enabling re-configuration and software updating via the wireless connection.
- A self-configuring and self-healing mesh networking protocol ensuring reliable detection data transfer.

M310 ACCESS POINT

The M310 Access Point maintains two way communications with over 250 M300 series sensors both direct and via M315 Repeater Units. For multi-storey car park applications at least one M310 Access Point would be required for each floor.

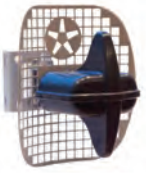
Two versions of the M310 Access Point are available:

- A small mains cabinet mounted version with Ethernet (TCP/IP) communications and either an internal mounted antenna for use with GRP cabinets; or a discrete externally mounted antenna; for the sensor wireless network.
- An externally pole mounted, mains powered version with integral GPRS modem for data communications and discrete externally mounted antenna; for the sensor wireless network. The GPRS modem has a convenient set up via two simple SMS messages being sent to the unit.

The M310 Access Points also feature an internal backup battery to ensure the wireless mesh network will remain operational even during a mains power outage.

The M310 Access Points provide the gateway and local data collection point for the M300 occupancy system and the parking management software. From the parking management software bay occupancy and optimisation can be monitored and managed and variable message signs to direct drivers to available spaces reducing congestion can be controlled.

M315 REPEATER UNIT



The M315 Repeater Units form part of the self-configuring and self-healing mesh network to ensure reliable, fast and robust communication of the detection data.

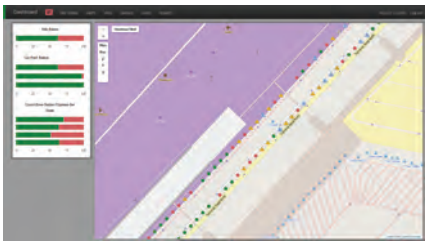
Utilising the same low power radio transmission technology as the M301 and M302 sensors in combination with a high quality integral battery ensures an operational life of 5 to 7 years. This battery is user replaceable.

The compact size of the M315 Repeater Unit allows for simple and discrete installation, mounting on existing street furniture such as sign poles, lamp columns or walls at an unobtrusive and vandal-resistant height of between 3 and 6 metres above the ground.

The M315 Repeater Unit is either omni-directional, approx. 35m range or uni-directional approx. 50m range when the supplied antenna reflector plate is utilised.

For on street parking applications an M315 Repeater Unit is recommended for every 20 detectors and for every 40 detectors in off street car parks.

PARKING MANAGEMENT SOFTWARE



The parking management software is built upon a scalable server based architecture application. Users access the software through a modern web browser interface providing a secure solution that is accessible and easily deployed.

The user interface provides a visual and interactive mapping facility to give an instant state of play of the parking usage, it features graphical information on occupancy and overstay information and device management information.

In addition alerts for overstay or capacity limits can be set and viewed.

Simple tools are incorporated to manage the control of and output to Variable Message Signs for both text and numeric based messages including confirmation of the actual display being shown on each sign. The software also includes a standard set of the most commonly used parking management reports.

GENERAL SPECIFICATIONS

M301 AND M302 SURFACE MOUNTED AND EMBEDDED OCCUPANCY SENSORS

Detection:	Infra-red and 3-axis magnetic field sensing
Frequency band:	868MHz ISM band (EU Certified licence free)
Power supply:	Lithium-Thionyl Chloride (Li-SOCl2) 3.6V
Battery life:	> 5 years
Ingress protection rating:	IP67
Operating temperature:	-40°C to +85°C (-40°F to +185°F)

Range, line of sight:-	
Detector to M315	35m or 50m with uni-directional antenna fitted
Repeater unit:	to M315 Repeater Unit
Detector to M310 Access point:	25m
M301 Dimensions:	Ø240mm x 35mm above road surface (sensor within mounting ring Ø167mm)
M301 Weight:	455g
M302 Dimensions:	Ø100mm x 20mm above road surface (Ø78mm x 53mm embedded)
M302installation core size:	Ø85mm x 54mm
M302 Weight:	325g

M310 ACCESS POINT

Frequency band:	868MHz ISM band (EU Certified licence free)
Ethernet version:-	
Dimensions:	125mm x 110mm x 56mm
Weight:	105g
Ingress Protection rating:	IP44
Operating temperature:	-40°C to +65°C (-40°F to +149°F)
Communications interface:	RJ-45 TCP/IP or SUB-D9, RS232
Power:	Adaptor, 100-240VAC, 50-60Hz, 15VAC

GPRS version:-	
Dimensions:	250mm x 90mm x 250mm (excluding pole mounting bracket)
Weight:	2.2kg
Ingress Protection rating:	IP65
Operating temperature:	-40°C to +65°C (-40°F to +149°F)
Communications Interface:	Integral GPRS modem
Power:	100-240VAC, 50-60Hz, 15VAC

M315 REPEATER UNIT

Frequency band:	868MHz ISM band (EU Certified licence free)
Power supply:	Lithium-Thionyl Chloride (Li-SOCl2) 3.6V (user replaceable)
Battery life:	5-7 years
Dimensions:	150mm (H) x 105mm (W) x 200mm (D); with directional antenna 200mm (H) x 170mm (W) x 200mm (D)
Weight:	365g
Ingress protection rating:	IP65
Operating temperature:	-40ºC to +85ºC (-40°F to +185°F)
Mounting:	3-6m high from floor on pole (lamp column or similar) min Ø40mm, Max Ø150mm or via wall mounting bracket included.

Range, line of sight:-	
M315 Repeater unit to M301 /M302 detector:	35m uni-directional or 50m with uni-directional antenna fitted
M315 Repeater unit to M310 Access point:	35m omni-directional or 50m with uni-directional antenna fitted

MANAGING CONGESTION IN SMART CITIES WITH INTELLIGENT PARKING

It is estimated and widely accepted that within a city centre often as much as 30% of traffic causing congestion is as a result of drivers looking and waiting for available parking spaces.

Providing motorists quickly and conveniently with advance information of available parking spaces therefore reduces congestion, saves time and fuel.

Such savings not only reduce the pollution associated with congestion but also alleviates driver frustration.

Drivers can be notified of availability of parking spaces in advance via a network of variable message signs or smartphone apps, both linked to real time information from the M300 range of parking bay sensors.

MAXIMISING CAR PARKING EFFICIENCIES WITH BAY MONITORING

Car park efficiencies can be maximised by utilising the M300 range of parking bay sensors. Variable message signs within the car park can effectively guide users to available spaces either in zones of floor by floor.

As a result, circulation through the car park is improved and in some cases the car park layout can be altered to maximise the number of actual parking bays available.

Combining the M300 range of parking bay sensors with our parking management software provides detailed information on car park usage, enabling car park managers to identify usage patterns of specific areas or zones within the car park and take action on any inappropriate use or to act quickly to open or close zones at particular times to flux with demand at the time.

IMPROVING CAR PARK MANAGEMENT AND REVENUE PROTECTION

Parking managers are able to monitor and analyse occupancy and trends either bay by bay, by zone, floor or car park. This information can provide information such as space turnover, average occupancy and show the most popular spaces.

By monitoring actual bay occupancy either on street or within off street car parks and linking this to the payment method, enforcement of non-payment or overstays can be targeted. By such targeting, only the bays showing exceptions need to be visited, and potentially a Penalty Notice issued, therefore maximising the effectiveness of the enforcement officers and car park revenues.

Golden River
Traffic Management Systems

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