

## **The Diamond Parking Guidance System - Sensor**

### **1. General**

The Diamond Parking Guidance System sensor is an ultrasound range-detector, designed to detect and indicate the status of one parking bay. As such, each parking bay is fitted with a sensor.

The Diamond PGS sensors are carefully designed to deliver the most accurate, cost effective and at the same time the most aesthetically pleasing system available.



### **1.1 Main features**

- High accuracy of 99.99%.
- Lowest power consumption in the industry - less than 300mW per unit.
- Bright, sharp space indicator with 360° viewing angle.
- Lightning protection on all inputs and outputs.
- Status LED for easy fault detection.
- Hot swappable.
- Low cost.

### **1.2 Operation**

The PGS Sensor emits an ultrasonic wave every 0.5 to 1.2 second and analyses the echo. A decision of whether a car is parked in the bay is made based on the echo level, size and timing. A bi-colour beacon indicator, typically Red/Green is then used to indicate the space availability.

The PGS Sensor communicates its detection mode to the ZoneBuffer to which it is connected, over its communication port.

The PGS Sensor is also equipped with status LED. The status LED indicates:

- Communication status
- Hardware status

This document must be read in conjunction with the “PGS Terminology.Pdf” available of our website ([www.jves.co.za](http://www.jves.co.za)).

## **2. Detailed description**

### **2.1 Mounting options**

The PGS Sensor is available in two mechanical versions:

- Hex Box PGS Sensor – The Hex Box PGS Sensor follows the industry standard of a stand-alone box that can be mounted straight on the ceiling, onto a cable tray or conduit junction.
- Trunking embedded PGS Sensor – The Trunking embedded PGS Sensor is an innovative way of combining the sensor and the cable Trunking. This system provides a low cost solution with aesthetically pleasing appearance. It is highly recommended for suspended applications but will also do well in a ceiling mount application

Both versions are electrically identical.

### **2.2 Combo / Split options**

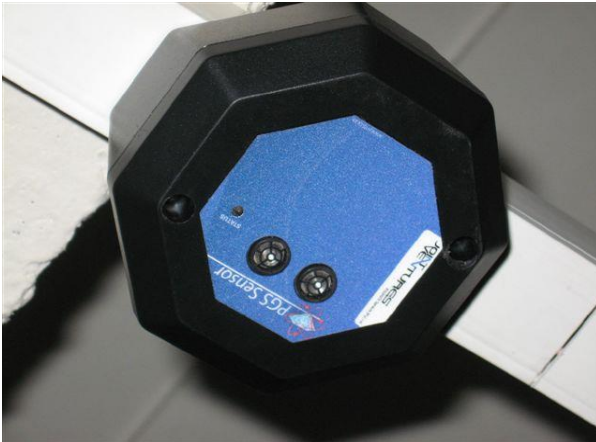
Each mounting option is available as a combo or as a split system option

- Combined Sensor/Indicator – Suitable in applications where there is free line of sight to the ceiling above the parking bays.



- Split Sensor/Indicator – Suitable in applications where obstacle such as support columns are obstructing the line of site to the ceiling above the parking bays.





HexBox sensor only



Trunking embedded Indicator only

### **2.3 Indicator colour options**

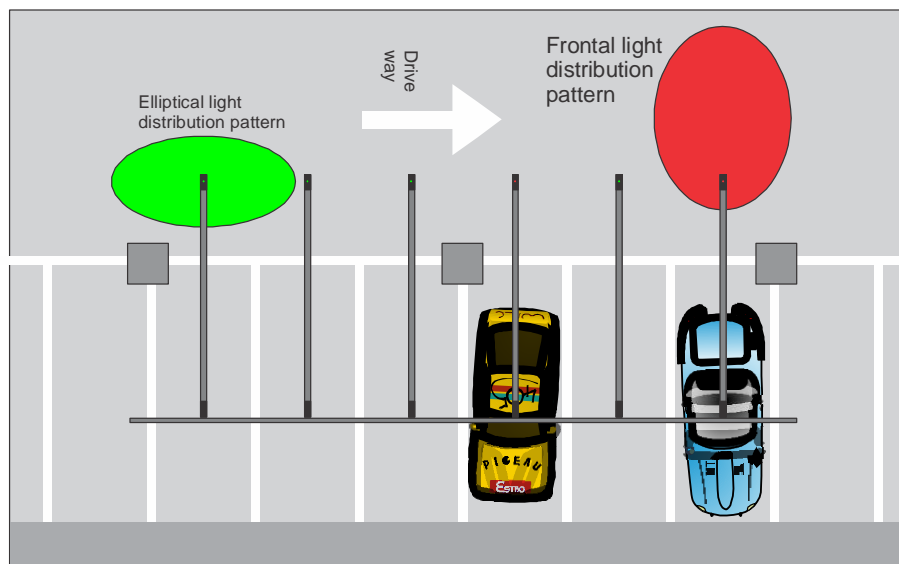
All the Sensor options, combined or split, are available in the following colour combinations:

- Red/Green
- Red/Blue
- Red/Yellow
- Red/White

The Various colours enable the zoning of specific areas such as allocated parking, disabled people parking, tenants parking etc.

### **2.4 Light distribution options**

All versions are available in two light dispensation patterns:



Elliptical light distribution pattern – This pattern provides a clear 360° visibility with emphasis along the driveway.

Frontal light distribution pattern - This pattern provides a clear 180° visibility with emphasis perpendicular to the driveway. It is useful against direct skylight in windowed parking.

## **2.5 Indicator mode control**

The indicator can be set to any of the following modes:

- Normal – Normal operation, indicating bay occupancy.
- Off – The indicator can be switched off completely.
- Red – The indicator can be forced to indicate occupied bay regardless of the bay status.
- Green - The indicator can be forced to indicate vacant bay regardless of the bay status.

In addition, each indicator can be set to blink.

The indicator mode is stored in a non-volatile memory.

## **2.6. Indicator intensity**

Ultra high brightness oval LEDs are used in conjunction with a specially designed light diffuser and reflector which create a clear and 360° visibility angle with emphasis towards the driveway.

LED specifications

Colour	Max Luminous intensity	Total Luminous flux	Distribution angle
Red	1500 Mcd	4.5 Lumen	120 X 60 Degrees
Green	3300 Mcd	10 Lumen	120 X 60 Degrees
Blue	1500 Mcd	4.5 Lumen	120 X 60 Degrees
Yellow	1500 Mcd	4.5 Lumen	120 X 60 Degrees
White	5000 Mcd	15 Lumen	120 X 60 Degrees

**Max Luminous intensity** – The intensity at the axis of the LED

**Total Luminous flux** – The total sum of the light emitted by the LED.

**Distribution angle** –The way the total light is distributed.

## **2.7 Intensity control**

The intensity of each indicator can be set to one of 15 intensity levels. This can be done over the communication port. The intensity data is stored in a non-volatile memory.

The combined Master/Slave will appear as single units at system level.

## **2.9 Communication options**

The Diamond PGS sensor is available with two communication options:

- RS232 – This format enables the PGS sensor to be connected in a Daizzy chain system configuration.
- RS422 – This format enables the PGS sensor to be connected in a Daizzy chain system configuration using balanced communication line.
- RS485 - This format enables the PGS sensor to be connected in a multi-drop parallel system configuration.

The protocols are available for any third party who wishes to develop its own PGS data collection system, utilising our trunking system. Contact us for more information

## **2.10 Status indicator**

Each PGS sensor is equipped with Red/Green bi-colour status indicator LED. The status indicator provides information regarding the communication and the operation of the sensor as follows:

- The Status indicator blips green every second – Communication is received and the sensor functions properly.
- The Status indicator blips red every second - Communication is not received but the sensor functions properly.
- The Status indicator blips green then red every second - Communication is received but the sensor does not function properly.
- The Status indicator blips twice red every second - Communication is not received and the sensor does not function properly.

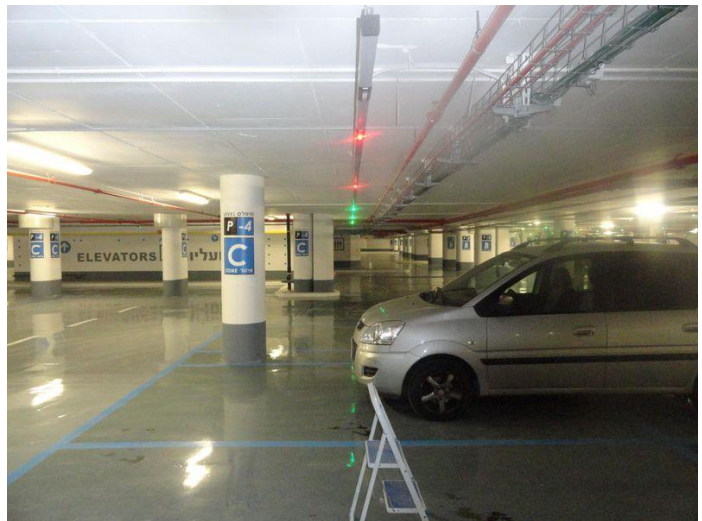


### 3. Application examples





**The Diamond PGS Sensor picks up anything**



**And anybody**





#### **4. PGS Sensor detailed specifications**

The following specifications are applicable to all the versions and combinations as described above.

<b>Power supply</b>	15V-30V
<b>Power consumption</b>	Less than 300mW
<b>Communication protocol</b>	Daisy chain RS232
<b>Detection range minimum</b>	200mm
<b>Detection range maximum</b>	2000mm
<b>Material</b>	Polycarbonate
<b>Housing</b>	IP56
<b>Mounting options for Hex-Box</b>	Attached straight to the ceiling. Attached to conduit junction boxes. Suspended under metal/PVC cableway

#### **Mounting options for the Trunking embedded PGS Sensor**

Clip into the dedicated Trunking system

<b>Operating temperature</b>	-20 <sup>o</sup> to +70 <sup>o</sup>
<b>Storage temperature</b>	-40 <sup>o</sup> to +85 <sup>o</sup>
<b>Safety Standard</b>	IEC 60950-1
<b>RFI/EMI Standard</b>	IEC 61000

**5. Ordering information:**

PGS/S/X/X/X/X/X/X

