

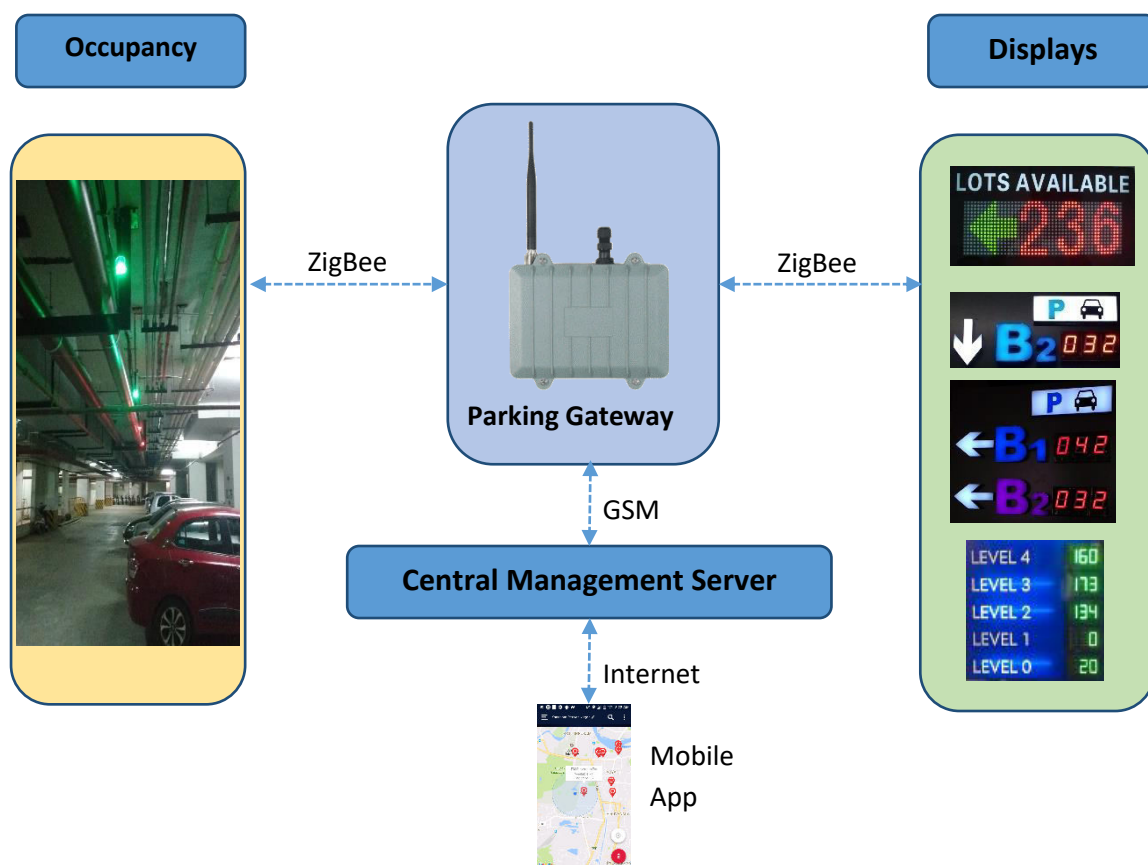
Off-Street Parking/Multi-Level Parking Guidance System

iRAM's Parking Information / Guidance System (PGS) is designed to make it very easy for users to discover the nearest available parking lot, guide them to the selected parking lot using online maps and to the available parking aisle. Due to the simplicity of the mobile app, more users park vehicles in the designated areas instead of in unauthorized areas.

Our PGS consists of Ultrasonic Sensors, Parking slot availability Light Indicators, Parking Guidance Signal, Parking Availability Display Boards (at entry points & at each floor), Parking Gateway and Mobile app for citizens.

Our PGS works independent of Parking Access Control / Management System. It connects directly with the Central Management Server and provides and updates the occupancy status based on real occupancy. This helps in detecting any intentional or accidentally missed payments, under-charging etc.

The following diagram depicts the various components of the PGS and their interactions within and



with external CMS.

Ultrasonic Parking Occupancy Sensor

Ultrasonic sensors generate distance data by measuring the time taken to receive reflected ultrasonic waves. The sensor has built-in dual colour LED light indicator. Whenever the sensor detects the presence of a vehicle, it turns the overhead LED indicator to green. When the vehicle is not present, the LED indicator will be red. Multiple sensors (up to 15) are connected to the sensor controller over serial connection. The sensor controller collects the signals from the sensors and passes it to the Parking Gateway over ZigBee. The Parking Gateway in turn updates the display boards and the CMS.



ADVANTAGES

- Easy Installation:- Installation is done on the ceiling by any electrical contractors
- No special equipment needed for installation as opposed to ground sensors
- Easy Replacement of faulty sensors on the ceiling
- Lower cost compared to magnetic sensor in indoor application
- Better propagation of wireless signals when the transmitters are on the ceiling
- Built-in temperature compensation for accurate vehicle detection.
- All the sensors have a unique id and are mapped to the parking lot & slot.

SPECIFICATION

Parameter	Value
Model	SVP-EM1-01
Detection Type	Ultrasonic waves
Dimension	12 cm dia
Max Detection Range	4.5 m
Visibility	100m
Working Frequency	40kHz
Protection	IP65
Operating Temperature	-10 C – 60 C

Parking Guidance Signal

The Parking Guidance Signal is a robust outdoor & 24/7 operable LED display. It displays the number of free slots and the directional arrow in which direction parking slots are available. The display can be any font in English, Hindi or Odiya, punctuation and graphic symbols. Multiple text can be displayed by rotating them at regular configurable intervals. It connects to the Parking Gateway over ZigBee and gets the parking availability information from it.



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SPECIFICATION

Category	Parameter	Value
Product	Model Name	VSS-DE0-13
	Diameter	10mm
Pixels	Pitch	10mm
	Density	10000dots/ m ²
	Screen Resolution	32x16 pixels
Screen Body	Show Content	Full colour video display
	Thickness	≤9cm
	Frame structure	Aluminium Frame (Silver White, Black)
	Screen Weight	30kg/ m ²
	Working Voltage	220V
Power Supply	Max. power consumption	≤450W/ m ²
	Average Consumption	100~150W/ m ²
	Control Method	Asynchronous / Synchronous
Control System	OS	Above WINDOWS 7
	Driving IC	HC595
Main Technical Parameter	LED driving Method	1/4 scan driving
	Refresh frequency	≥180HZ
	Frame frequency	≥75 frame/s
	Grey scale / colour	256/256 grade
	Luminance	≥2000cd/ m ²
	Best viewing Angle	±60°
	Optimum Viewing Distance	10~60m
	Effort communicate distance	Within 120m
	Working temperature	-20°C~ +60°C
	RH	15%-85%

Parking Information Signs

The Parking Information Sign Boards are robust outdoor & 24/7 operable LED displays. They display the number of free slots that are available at each floor. The display can be any font in English, Hindi or Odiya, punctuation and graphic symbols. Multiple text can be displayed by rotating them at regular configurable intervals. These displays provide information about parking availability and guide users to nearest parking space. The displays are automatically updated by the parking gateway at the parking location itself. The change in occupancy status is communicated to the display by the sensor controller through the parking gateway over ZigBee protocol.

The displays are conceptualized and designed by our team. The 3-D projected display is elegant and aesthetically pleasing to the eye. On the other hand the reflective font displays are simple and less power hungry.

The following type of displays are provided.

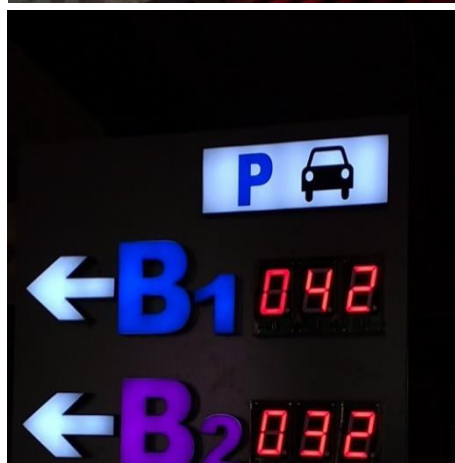
Outdoor Approach Road Displays

These displays provide the total available parking slots information across all levels and are placed before the entrance of the parking area. This helps the drivers to decide whether to enter a parking area or not. These displays are typically multi-line displays.



Entry Point Displays

These displays are similar to the Outdoor Approach Road Displays and provide the total available parking slots information across all levels and are placed at the entry point inside the parking area. This helps the drivers to decide which level to take based on the availability of the slots. These displays are typically multi-line displays.



Level Displays

These are single line displays that indicate the total available parking slots in a level. It also displays the level name and its direction. These are installed at the entrance of each level and helps the driver to make an informed choice.



SPECIFICATION

Parameter	Value
Model	VSS-DE0-33 (for Type A) & VSS-DE0-13 (for Type B)
Dimension	Custom made – size depends on the number of floors/levels
Matrix LED tile size	½ ft by ½ ft
Power Supply	12V DC, 5A
Enclosure	All weather proof
Communication	Wireless IEEE 802.15.4
Visibility	50m

Parking Gateway

The Parking Gateway is the heart of the Parking Guidance System. It receives the occupancy information from the sensors and relays it to the local display boards and the Central Management System. The communication between the Sensor Controller, Display Boards and the Gateway is over ZigBee and between the Gateway and the CMS is over GSM. Apart from providing communication between devices and CMS, it also tracks the sensor and display devices and reports any faults to the CMS.



SPECIFICATION

Parameter	Value
Model	GZM-ERW-SB
In & Out Protocols	ZigBee (2.4 GHz) & GSM (2G/3G/4G)
Ports	USB 2.0, UART Serial Port, 10/100M Ethernet
Enclosure	All weather proof
Power Supply	230V AC
Operating Temperature	-10C to 70C