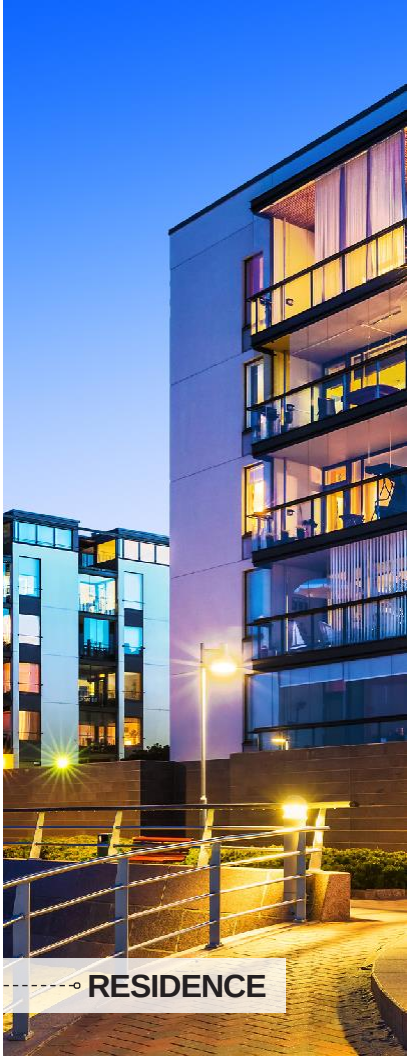
PARKING
AND ENERGY

SMART-PARK INNOVATIONS



SmartPark IoT-based Parking and Energy Management Solution helps eliminate the chaos of a multi-level car parking system.

The Parking and Energy Management Solution for multi-level car parking is designed to ease the process of finding parking lots, while ensuring energy efficiency through lighting automation and using Solar Cell.

Parking facility in offices can be enhanced to save employee time and increase productivity. In malls, it reduces waiting time, optimises space and results in higher footfall.

BENEFITS

Increases Employee Productivity and Saves Customer Time

Employees can spend up to 20 minutes to look for parking. Given that employers invest a lot for employee productivity, this system can be used to minimise the time spent to look for a vacant parking and utilise that time for work. In malls, customers can spend that time shopping instead of searching for parking lots.

Energy Optimisation

The lights remain switched off or dimmed when there is no human or car movement. This results in reducing energy consumption by up to 80%* with the use of IoT technology. Data collected wirelessly over the connected parking management system also gives an in-depth understanding of using the parking lots and reducing energy costs.

Efficient Space Planning

Managing underutilised parking and traffic during peak hours is easy with advanced analytics. Sensors provide data about underused parking lots in the building which can save up to 20 minutes and help manage car parking. This makes managing traffic during peak hours easy.

Enhanced Safety

Dimly lit areas are prone to accidents, especially in large car parking. A centralised lighting management system not only improves lighting, but also optimises lights for better visibility and avoids accidents.

Easy Installation

This system is easy to install, program and service. Complete installation can be deployed in a few weeks.

Centralised Data Monitoring and Remote Accessibility

Multi-level car parking can be monitored from a single dashboard - from anywhere, at any time. Management dashboards can also be remotely assessed using web service on external systems or displays.

Resource Optimisation

Every parking requires multiple resources to manage real estate space. With this system, lesser manpower will be required as there is complete visibility of available parking lots.

SOLUTION

Utilising multi-sensing technologies, Honeywell's Car Parking and Enegry Management Solution will ensure smooth flow of vehicular and human traffic in and out of the parking bays while efficiently managing the lighting in the area. Parking space allotment is done through a completely automated system.

Data analytics gathered from the solution will give facility managers a deep insight into managing the needs of a growing space while optimising the convenience of the users. Analytics assist the manager on unutilised space and how to save more on electricity while reducing the dependency on manual management. This can be programmed and controlled remotely.

Honeywell's Parking and Energy Management Solution consists of a distributed network of sensors, which is a combination of Lux, PIR and ultrasonic sensor data, which is collected by the controllers, and gateway, which gathers data over every parking lot and feeds this information to a central server machine. This information is used for both distributed and central decision-making, providing ease to the user and the facility owner/enterprise.

SYSTEM **ARCHITECTURE**

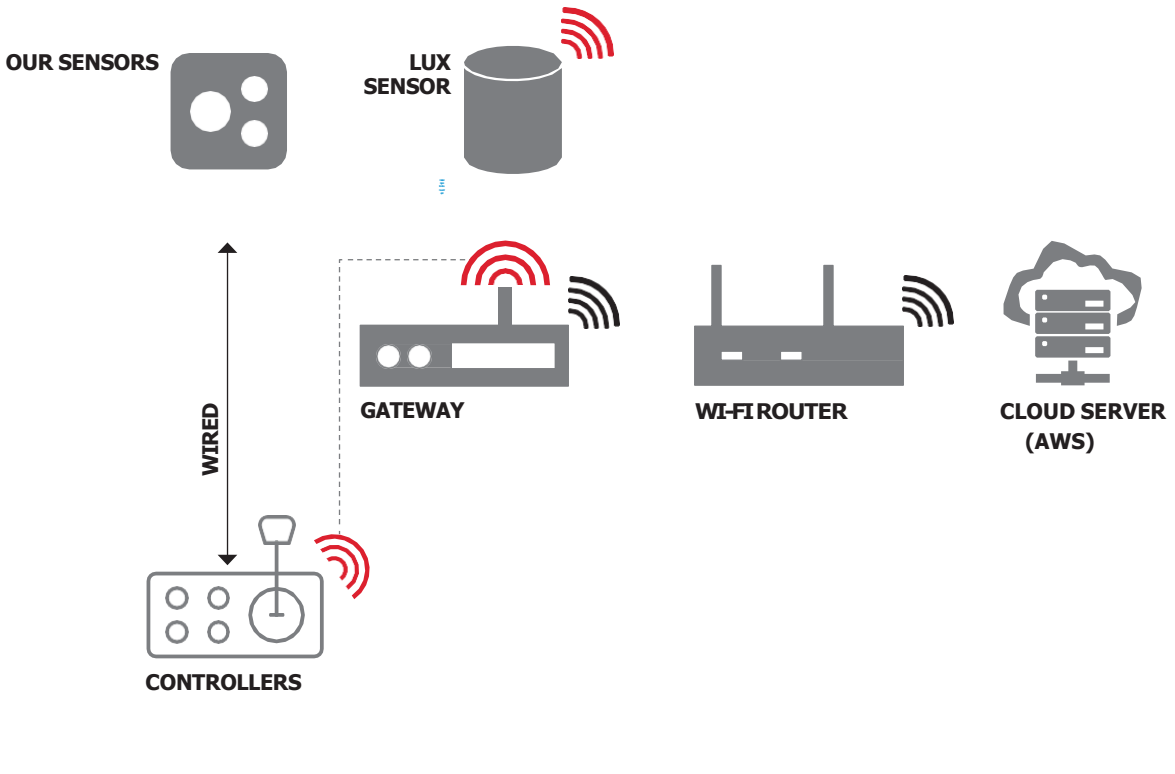
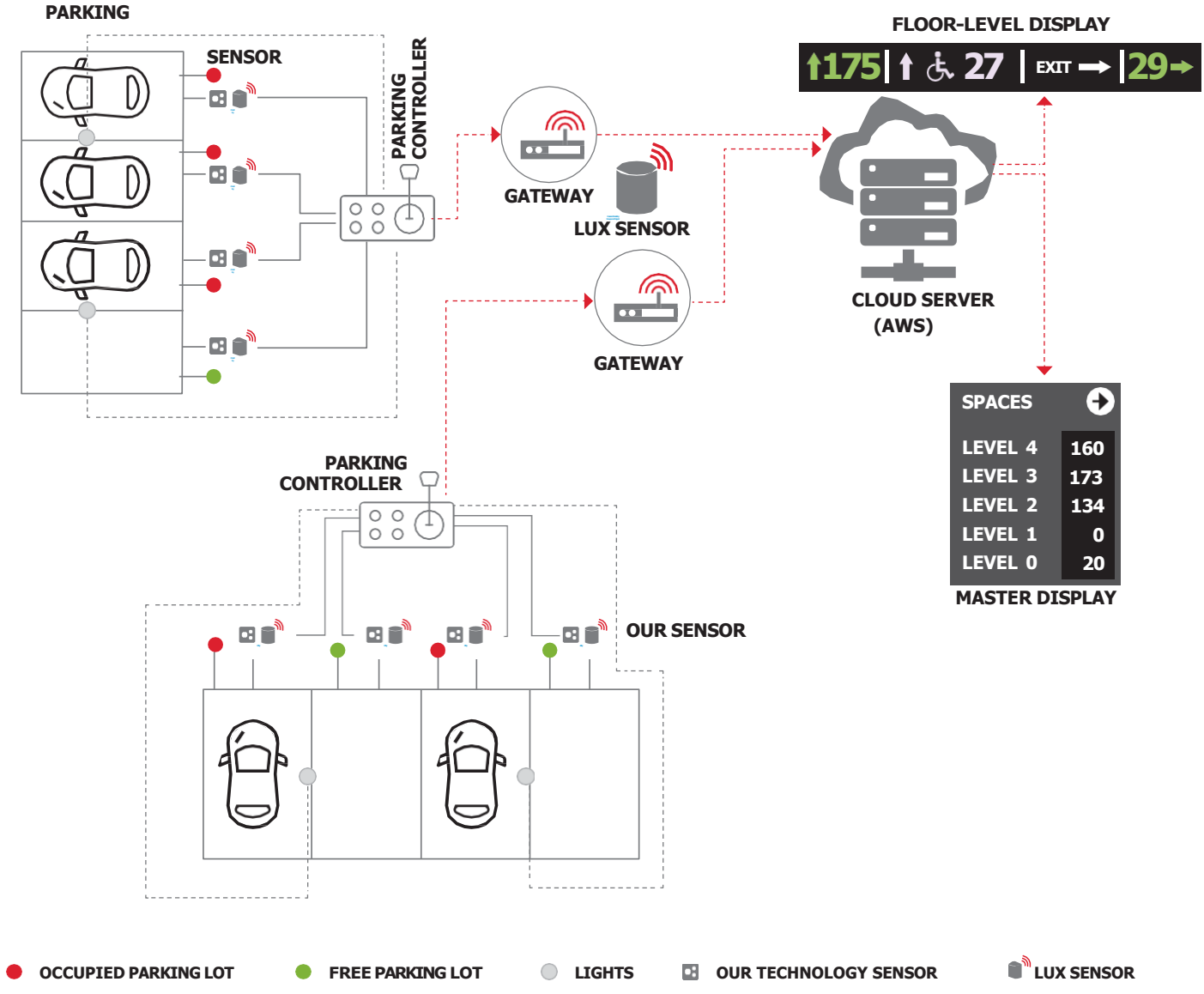
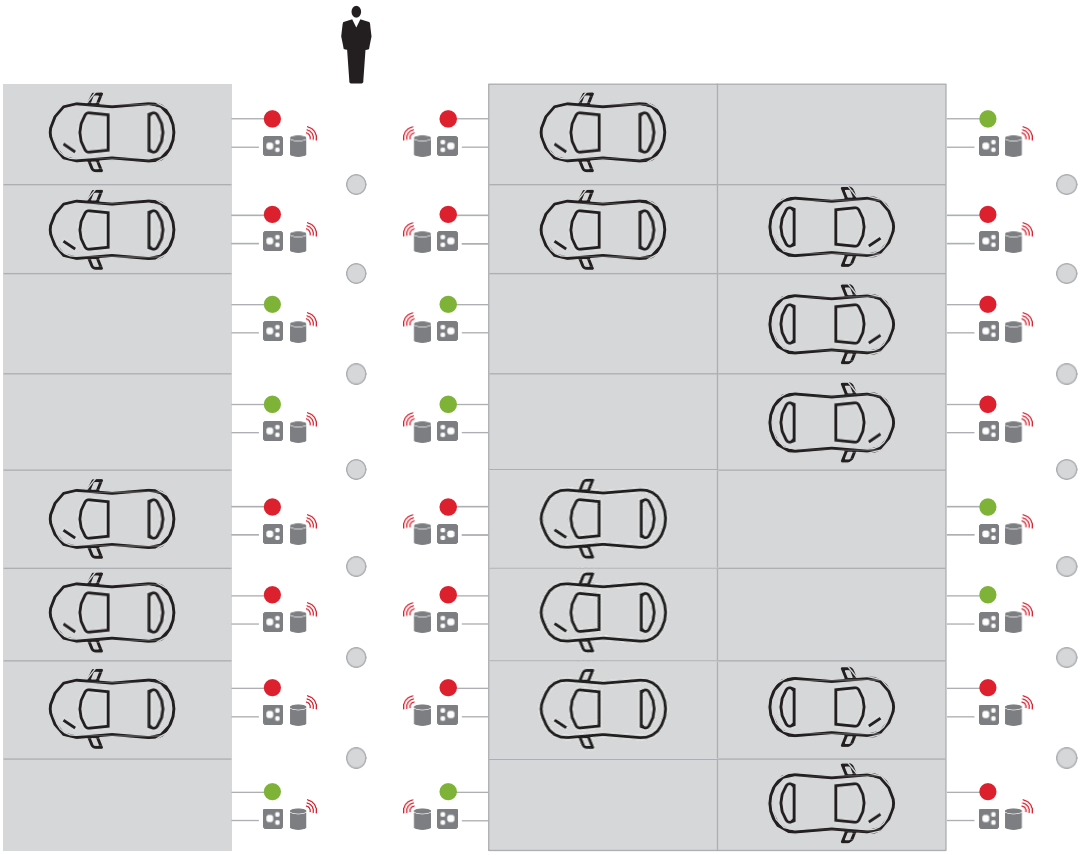


DIAGRAM FOR **PARKING SOLUTION**



LIGHT TURNS OFF OR IS DIMMED
WHEN THERE IS NO HUMAN OR CAR MOVEMENT



SPACES	
LEVEL 4	160
LEVEL 3	173
LEVEL 2	134
LEVEL 1	0
LEVEL 0	20

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LEVEL 4	160
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LEVEL 1	0
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SPACES	
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LEVEL 3	173
LEVEL 2	134
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OCCUPIED PARKING LOT

FREE PARKING LOT

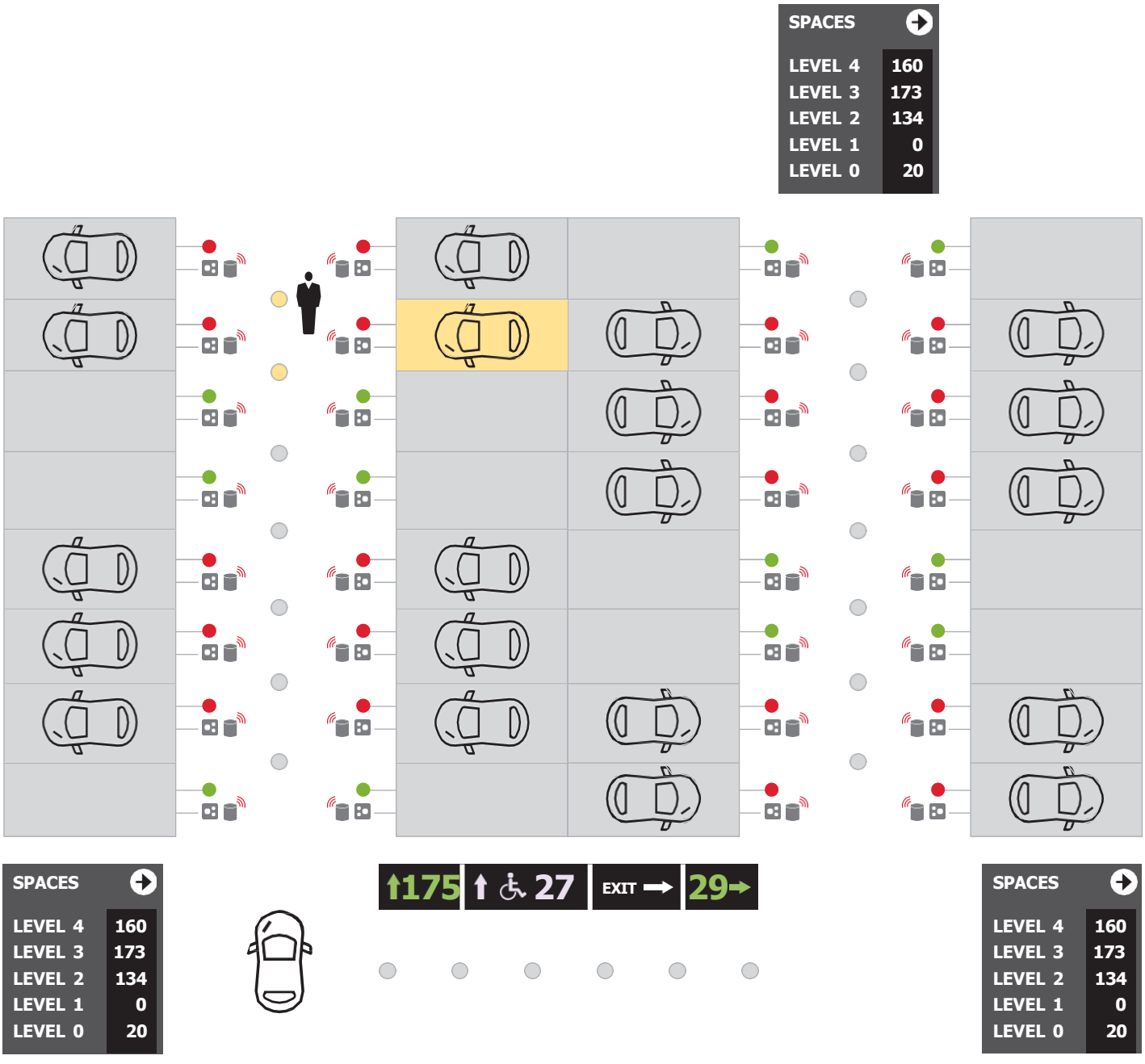
LIGHTS OFF / DIM LIT

LIGHTS ON

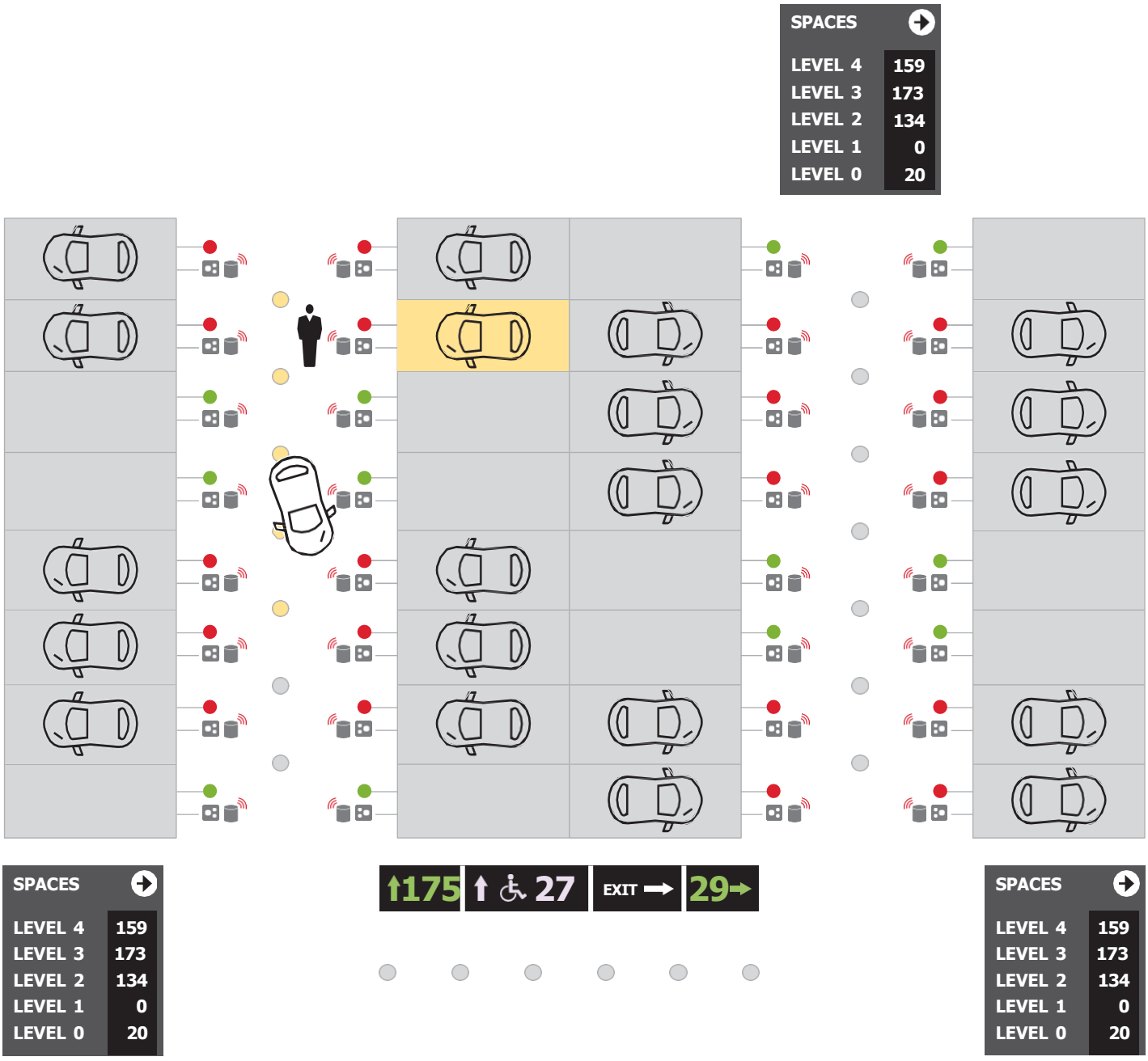
OUR TECHNOLOGY SENSOR

LUX SENSOR

RESPECTIVE LANE LIGHT TURNS ON
WITH HUMAN OR CAR MOVEMENT



WHEN A CAR LEAVES, RESPECTIVE LANE LIGHT TURNS ON
AND VACANT PARKING LOT IS DIMMED OR SWITCHED OFF



PARKING **SENSOR**

Our-technology Parking Sensor is designed to detect human or vehicular presence in a given area. This sensor is used in every parking lot and common areas.

SPECIFICATIONS

- Our technology sensor
  - Ultrasonic sensor for detecting cars
  - Passive infrared sensor for detecting human presence
- Ultrasonic sensor range
  - Field of View: 15º
  - Maximum detection height: 4m
- Passive infrared sensor range
  - Field of View: 85º
- Optional dual-colour LED indicator output
- Compact ceiling-mountable device
- Keep alive notifications
- Input ports:
  - RJ25 connection for both power and data transmission to Honeywell Parking Controller
- Output ports:
  - RJ25 connection for LED indicator output

PARKING **CONTROLLER**

Controller is a wireless-enabled solution for networked lights that allows users to control LED lights and dimmable CFLs. Dual-channel 0 - 10V analogue controller for dimmable drivers.

SPECIFICATIONS

- Functions as local data collector for parking sensors
  - Takes data from upto 4 parking sensor devices
- Forwards data to Honeywell gateway
  - Zigbee communication
  - Transmit power: +4 dBm
  - Data rate: 250 Kbps
- Operating voltage: 230V AC
- Output ports: 4
  - RJ25 data and power interface to Honeywell Parking Sensor
- Optional lighting control capability
- Ceiling-mountable device
- Keep alive notifications

AMBIENT **SENSOR**

Ambient Sensor is a completely wireless, comprehensive sensor which can measure ambient light, ambient temperature and humidity levels.

SPECIFICATIONS

- Integrated sensor for temperature, humidity and lux-level measurements
- Range
  - Temperature range: 0ºC - C55ºC
  - Humidity Range: 0% - 100% RH
  - Lux range: 0 - 10,000 Lux
- Measurement accuracy
  - Temperature: ±0.4ºC
  - Humidity: ±3% RH
- Data communication to SmartPark gateway over Oreo
  - Transmit output power: 0 dBm
  - Transmit data rate: 250 Kbps
- Battery powered device
  - Coin cell CR2477N (1,000 mAh)
- Keep alive notifications

GATEWAY

Gateway is engineered to communicate with the wireless sensor, controller and the back-end server. The gateway operates at ISM 2.4 GHz frequency band. The gateway also acts as a Oreo mesh co-ordinator and zonal controller.

SPECIFICATIONS

- Manages network and data monitoringfunctions of Lighting Management System
- Zigbee network co-ordinator
- Can transmit data over TCP/IP networktoserver
  - WiFi and ethernet interface
- Built-in data logging capability
- Wireless parameters
  - Transmit power output: +10 dBm
  - Receiver sensitivity: 90 dBm
- Can connect to upto 60 Zigbee devices
- Ceiling and wall-mountable