# Wireless Solutions for Parking Guidance & Occupancy



**BANNER** ®

more sensors, more solutions
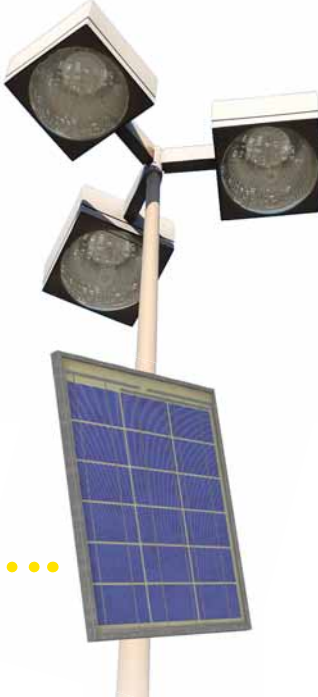
# Solutions for outdoor parking

The M-GAGE Parking Sensor uses 3 axis magneto-resistive technology for sensing large ferromagnetic objects. It communicates by radio automatically its status to the wireless Gateway. The form factor of the M-GAGE sensor is a small epoxied 70 mm disk that is only 25 mm thick.

The radio receiver and transmitter devices can be mounted directly on the Banner solar panel kit and installed on top of a pole. Alternatively, they can be placed close to the display using the local power supply.

A supervision system collects, analyses and transmits the information to all displays through the Data Radio MultiHop network.

The supervision system is most of the time installed in a control room. It can be a basic PLC that will manage communication, or a specific HMI or PC offering a visual interface and access to all data.
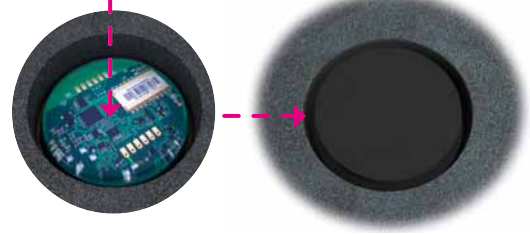
# Parking Sensor: Installation Possibilities

**Underground installation:** the epoxied sensor is directly mounted under the road surface.

**Flush mount:** the sensor goes into a protective housing that only is 30 mm deep. This means that the sensor remains accessible for maintenance purposes.

**Surface mount:** this protective heavy duty housing can be fixed on the road surface (for example with two component road adhesive). This will be the fastest mounting method. The sensor also remains accessible for maintenance purposes.

The local parking kiosk collects occupancy information and sends this to the control room via GPRS or cable.

# Solutions for underground parking

The Banner wireless indoor parking sensor uses ultrasonic technology and has a replaceable 3,6 VDC 'D-cell' battery. It can be mounted directly on the ceiling to avoid the traditional cable installation labour cost.

The Light Node, also battery based, is flashing green when spaces are available. This option will guide the drivers to the nearest available parking space.

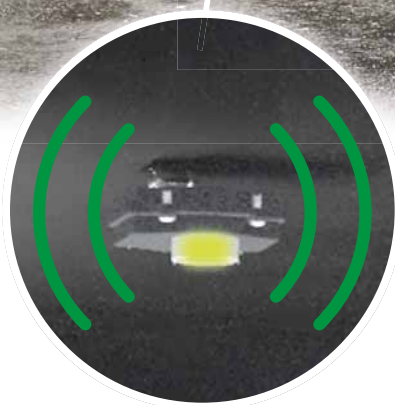Wireless Gateway

Light Node

Ultrasonic Node

When there is no parking
space available, the green
lights on the node are OFF.

When a parking space is
available, the green lights on
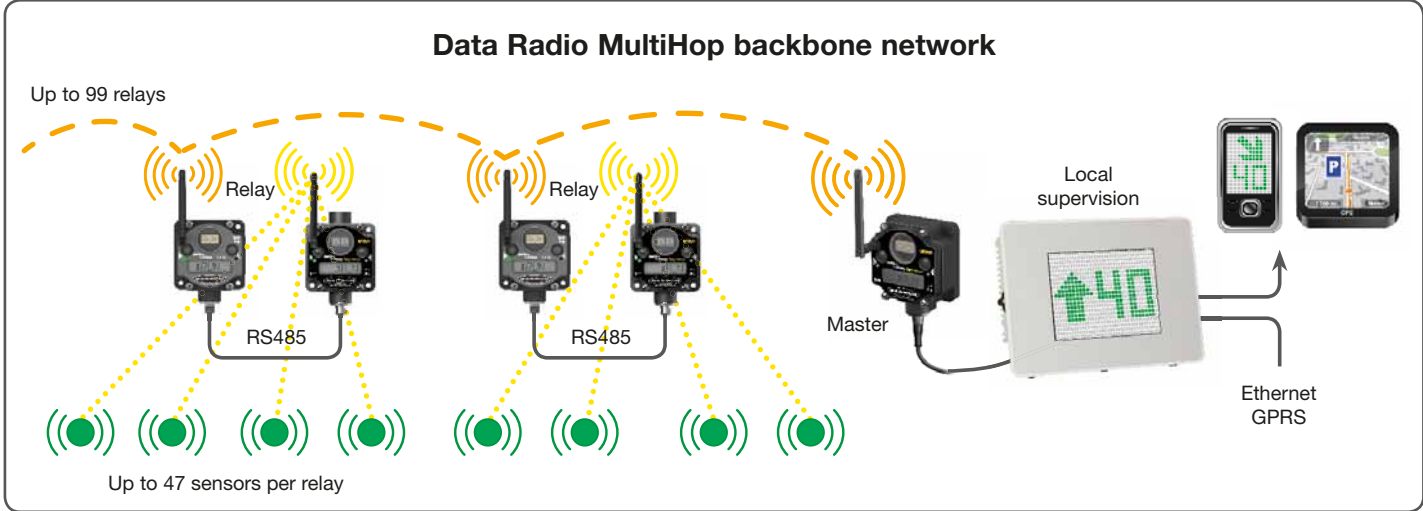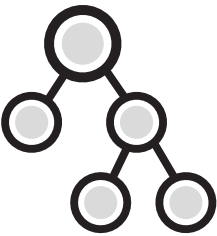the node are ON.

# Effective parking guidance

Instead of using one light per parking space, the Light
Node can manage a group of 3 up to 6 places when
mounted on the side or in the middle of the corridor.
The supervision system can link a specific Light Node
with a group of Ultrasonic Nodes, and keeps the green
LEDs active as long as at least one parking space of the
group is free. This can reduce significantly the complete
installation cost whilst keeping an effective local guiding
indication.

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# Network Layout

Banner wireless parking sensors are bound to a Gateway, each can handle up to 47 sensors (depending on local signal strength). For a small number of parking spaces only one or a few Gateways are sufficient, but for large installations the combination with another radio network capable to transmit RS485 communication is recommended.

The Data Radio MultiHop with a 'tree topology' network brings back all information through the different repeaters.

### Data Radio MultiHop backbone network

Up to 99 relays

Relay    Relay

Local supervision

RS485    RS485    Master

Ethernet GPRS

Up to 47 sensors per relay

### Wireless Sensor Models

The sensors can be either the M-GAGE parking sensor, the ultrasonic sensor node or the light node.

M-GAGE Parking Sensor    Ultrasonic Sensor Node    Light Node

### Relay Models

The relay is a combination of 2 radio devices connected together by RS485. The Gateway of the DX80 network collects the local sensor's status. The Data Radio MultiHop repeater transfers all information to the master in the control room. Both Gateway and Data Radio repeater are available as IP20 boards or in IP67 housings (for example with the solar panel option).
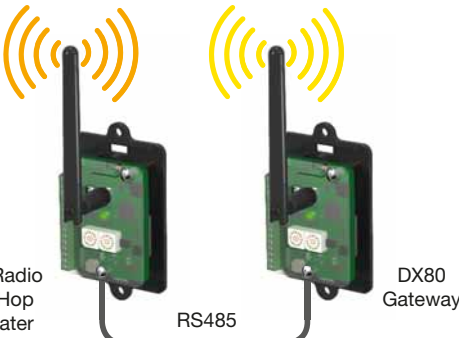
IP67 Housing    IP67 housing with solar panel option    IP20 board

Data Radio MultiHop Repeater    RS485    DX80 Gateway

Data Radio MultiHop Repeater    RS485    DX80 Gateway

| Photo | Model | P/N | Protection | Temp. | Specifications |
|---|---|---|---|---|---|
| | M-GAGE 3 axis magnetic sensor (typical for outdoor use) | | | | • Sample rate 1 s (adjustable)<br>• Replaceable lithium battery pack (5 years battery lifetime)<br>• Dimensions: ø 70 mm, H 25 mm |
| | DX80N2X1W0P0ZT<br>DX80N9X1W0P0ZT | 18363<br>18362 | IP67,<br>NEMA 6 | -40°C to<br>+85°C | |
| | Ultrasonic sensor (typical for indoor use) | | | | • Range up to 4000 mm; sample rate 10 s (adjustable)<br>• Replaceable lithium D battery (7 years battery lifetime)<br>• Polycarbonate housing, weight: 0.30 kg (0.65 lbs) |
| | DX80N2X1W0P0U<br>DX80N9X1W0P0U | 25663<br>25662 | IP67,<br>NEMA 6 | -40°C to<br>+85°C | |
| | Light Node (typical for indoor use) | | | | • 180° flashing LEDs<br>• Replaceable lithium D battery (2 years battery lifetime)<br>• Polycarbonate housing, weight: 0.30 kg (0.65 lbs) |
| | DX80N2X1W0L1<br>DX80N9X1W0L1 | 25638<br>25661 | IP67,<br>NEMA 6 | 40°C to<br>+85°C | |
| | Gateway | | | | • Radio range: 900 MHz: up to 9.6 km (6 miles)<br>  or 2.4 GHz: up to 3.2 km (2 miles)<br>• Interface: 2-wire half-duplex RS-485 ModBus RTU<br>• Power: +10…30 VDC or 3.6…5.5 VDC<br>• Polycarbonate housing, weight: 0.26 kg (0.57 lbs) |
| | DX80G2M2S-P<br>DX80G9M2S-P | 82048<br>82047 | IP67,<br>NEMA 6 | -40°C to<br>+85°C | |
| | Data Radio MultiHop | | | | • Radio range: 900 MHz: up to 9.6 km (6 miles)<br>  or 2.4 GHz: up to 3.2 km (2 miles)<br>• Interface: 2-wire half-duplex RS-485 Modbus RTU<br>• Power: +10…30 VDC or 3.6…5.5 VDC<br>• Polycarbonate housing, weight: 0.26 kg (0.57 lbs) |
| | DX80DR2M-H<br>DX80DR9M-H | 11433<br>11431 | IP67,<br>NEMA 6 | -40°C to<br>+85°C | |
| | Gateway board<br>Star topology | | | | • Radio range: 900 MHz: up to 9.6 km (6 miles)<br>  or 2.4 GHz: up to 3.2 km (2 miles)<br>• Inputs/outputs: ModBus RS485 + discrete + analogue<br>• Power: +10…30 VDC or 3.6…5.5 VDC<br>• Dimensions: L 94 mm x W 26.8 mm x H 53 mm |
| | DX80G2M6S-PB2<br>DX80G9M6S-PB2 | 25756<br>25755 | IP20,<br>NEMA 1 | -40°C to<br>+85°C | |
| | Data Radio MultiHop board<br>Tree topology | | | | • Radio range: 900 MHz: up to 9.6 km (6 miles)<br>  or 2.4 GHz: up to 3.2 km (2 miles)<br>• Inputs/outputs: ModBus RS485 + discrete + analogue<br>• Power: +10…30 VDC or 3.6…5.5 VDC<br>• Dimensions: L 94 mm x W 26.8 mm x H 53 mm |
| | DX80DR2M-HB2<br>DX80DR9M-HB2 | 17423<br>17422 | IP20,<br>NEMA 1 | -40°C to<br>+85°C | |

Models with **"2"** in the model name are for 2.4 GHz. Models with **"9"** in the model name are for 900 MHz, only for US and Canada.

| Photo | Model | P/N | Temp. | Specifications |
|---|---|---|---|---|
| | Solar panel kit<br>**BWA-SOLAR-001** | 81057 | -30°C to<br>+50°C | • FlexPower solar supply with rechargeable battery pack<br>• Nominal output voltage: 5.0 VDC; max. output current: 1000 mA<br>• Continuous output current: 70 mA per hour of sunlight/day<br>• Dimensions: 348 mm × 386 mm × 19 mm; weight: 4.70 kg (10.35 lbs) |
| | Splitter cable for solar panel kit<br>**CSRB-M1250M125.47M12** | 83265 | | |

# Vehicle Detection and Counting

### Access Control

The R-GAGE is a FMCW radar that can detect also static vehicles and objects. Perfect for outdoor environment because it is insensitive to all weather conditions and is sunlight Immune. It can be placed behind a plastic window for antivandalism purposes.

The wired M-GAGE is an inductive loop replacement without the need of an external controller. Because of its slim line design, it can be placed in a single cut out.

The Q45W is a battery based optical wireless sensor. It is perfect for a quick and easy installation, for example when laying cables is not practical or too expensive.

## Sensors

- Presence/Absence Detection
- Foreground & Background Suppression
- GO/NO GO Inspection
- Gating and Triggering
- Parts Counting
- Level and Distance Measurement
- Positioning
- Contrast and Colour Sensing
- Vehicle Detection (Radar, Ultrasonic & Magnetic Technology)

## Vision

- Vision Sensors with Onboard User Interface
- Pattern Recognition
- Traceability (Barcode, Datamatrix and Text Reading)
- OCR/OCV
- Complex Part Inspection
- Part Orientation
- Assembly Verification
- Colour Inspections
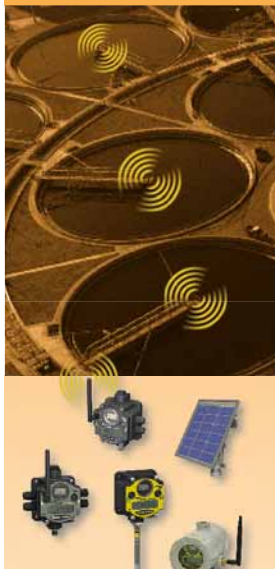
## Wireless I/O

- Slip Ring Replacement
- Tank Farm Monitoring
- Livestock Environmental Monitoring
- Water and Wastewater Treatment
- HVAC Remote Monitoring
- Traffic Monitoring & Control
- Remote Sensing in Process Automation
- Cable Replacement
- ATEX Approved Solutions

## Lighting & Indicators

- Bin & Part Picking
- Error/Mistake Proofing
- Pick-to-Light & Put-to-Light
- Operator Guidance
- Call for Parts
- Incorrect Pick Signal
- Remote Start/Stop Indication
- Work Station Lighting
- Mobile Equipment Work Lights
- Production Machine and Cabinet Lighting

## Machine Safety

- Safety Light Screens
- Ergonomic Two-Hand Control Devices
- Safety Modules
- Emergency Stop Devices
- Safety Interlocking
- Laser Scanners for Safety Applications
- Programmable Safety Controllers
- Enabling Devices

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