

BS2-PS

GSM-Equipped, Solar-Powered Data Collector & Transmitter for Parking Management Applications



ADEC's **Base Station 2** IoT (Internet of Things) gateway is a data aggregator that provides the key link between the ADEC parking occupancy detectors (PODs) and the ADEC web server: The BS2 forwards occupancy status changes from the assigned PODs to the web server.

The **BS2-TS** variant is battery operated and charges itself using the attached solar panel. It can be mounted and properly aligned on any stable structure, such as a streetlight pole, using the attached bracket.

Typical Applications

The parking detector system has been developed specifically for outdoor parking lots where detectors cannot be mounted overhead but high-accuracy detection is required. Typical applications include:

- Any urban and downtown car parking spaces
- Street parking
- Theme parks
- Campus parking lots
- Any other outdoor parking area with marked parking spaces

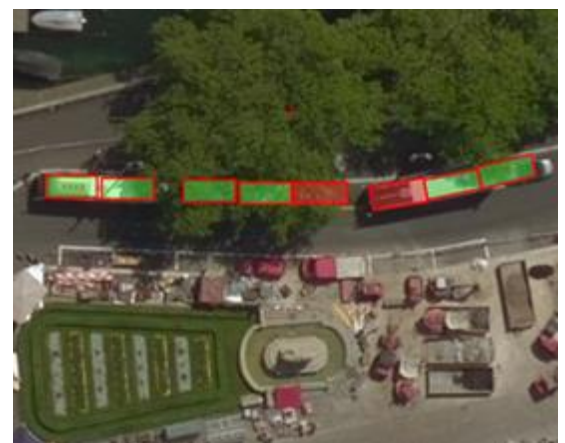
Principle of Operation

Parking occupancy status updates from the PODs are received and transmitted to the Internet of Things (IoT). ADEC Technologies has tailored a leading IoT service to parking and traffic applications using the BS2, building the ADEC web server. It serves as the data repository for the present and past occupancy status of each POD. The BS2 monitors all PODs that are assigned to it and are located within a typical range of 250 m (820 ft). The occupancy status is made available to any third-party system via simple web interfaces. Such applications can include third-party apps allowing users' devices to receive up-to-date occupancy status information onto their mobile devices.

Features

- **Autonomous Operation**
The power to operate the system, including the GSM modem and the radio link to the PODs, is provided from the built-in battery, which is recharged from the attached solar-panel
- **Secure Internet Storage & Access**
Specifically designed for integration into the *Internet-of-Things* (IoT) via the ADEC web server. Easy occupancy status retrieval from any third-party system, such as parking guidance apps etc. via easy-to-use web-interface
- **Built-in 3G Modem**
Propagates occupancy changes to the Internet-of-Things (IoT) as they occur and allows setup/management over any Internet connection, including mobile phones (requires ADEC DET-Soft for Android from Playstore)
- **Built-in Antennas**
For both radios to communicate with the PODs as well as the mobile phone network
- **Inexpensive Operation (Western Europe)**
Low-cost operation and data plan account management online
- **Minimal Wind Load**
Thanks to small size of only 360 x 260 x 100 mm @ 3.5 kg (14.2" x 10.3" x 4" @ 7.7 lbs)

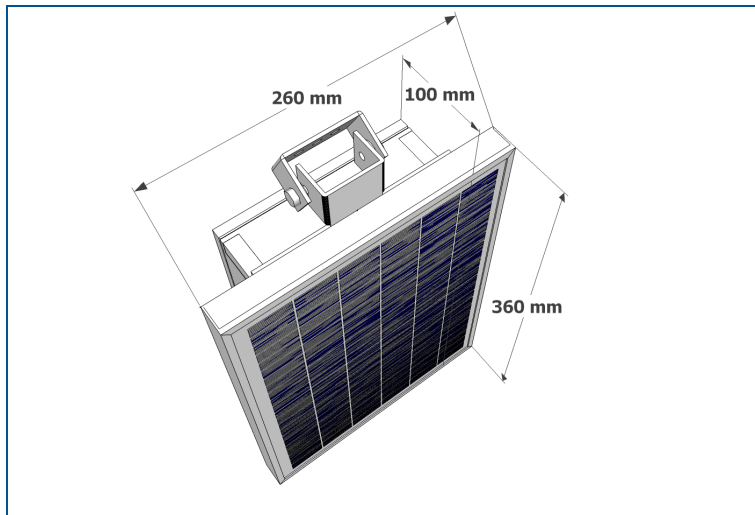
Typical application



Technical Specification

Electrical	
Capacity	10 Ah for 5 days autonomous operation
Solar Panel	Polycrystalline, 10W
Communication	RF in license-free band (e.g. 868 MHz) Range: 1000 m (LOS), 250 m (min.)
Network	GSM (2G/3G)
Mechanical	
Dimensions	see drawing
Housing	Weather-proof plastic enclosure
Weight	app. 3.5 kg (7.7 lbs) all inclusive
Environment	
Operating Temperature	-20° to +55°C (-4° to +160°F)
Humidity	max 95 % (non condensing)
IP protection	IP 64

Mechanical Dimensions [mm]



Mounting

The BS2 is attached to a pole or other stable structure using the pole-mount adapter TDC-PMA (optional accessory). Both the location of the BS2 as well as the angle of the panel should be set to maximize the solar irradiation onto the solar panel during winter season. Season and time of day as well as distance to the farthest POD must be taking into consideration when choosing the optimal mounting location: Maximum distance to the farthest POD must not exceed 250 meters (820 ft.) whereby each parking space or car where the POD is installed that belongs to the BS2 must be in line of sight from the BS2. The system is not designed for use indoors or inside parking garages.

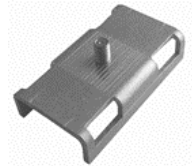
Important:

Data is based on samples and believed to be representative. Design and specification changes reserved without prior notice. For more specific information on the products, their installation and application please refer to the installation manual or contact the manufacturer.

Optional Accessories

Pole Mount Adapter (PMA)

A bracket for mounting the BS2 on a round pole (optional accessory, not included in standard delivery).



TDC-PMA: **14101**

Parking Occupancy Detector (POD)

The POD is mounted into or onto the pavement of the parking space to be monitored and transmits the occupancy status to the BS2 through its built-in radio. The battery-powered device is designed for 7 years of operation



POD: **10100**

ADEC Web Server / IoT Service

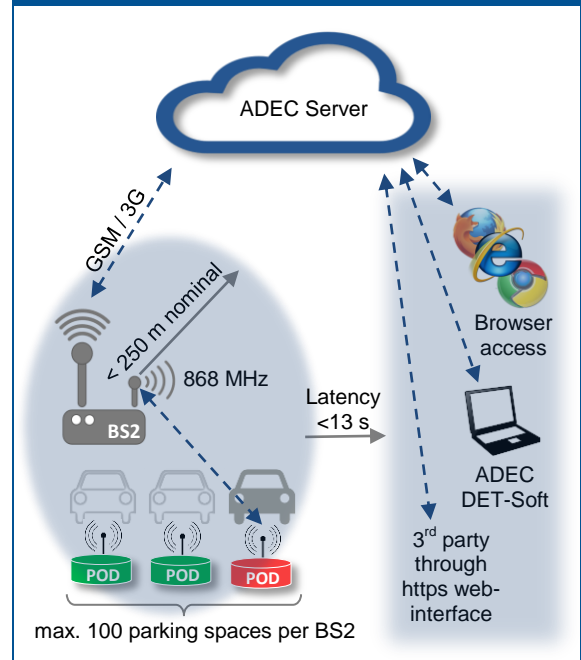
M2M data plan: **11312**

ADEC web server: **11310**

ADEC DET-Soft für Windows und Android

Software for commissioning and retrieval of historic values from the web server, available for Windows 7 (or greater) and Google Android devices

System Overview



Model Overview

Model	Description	Part #
BS2-P	Externally and permanently powered, no battery	11303
BS2-PB	with battery but no panel, for intermittent, external power	11305
BS2-PS	With battery and with panel	11304