

**CARLO GAVAZZI**  
Automation Components



# Dupline<sup>®</sup> Carpark Guidance System

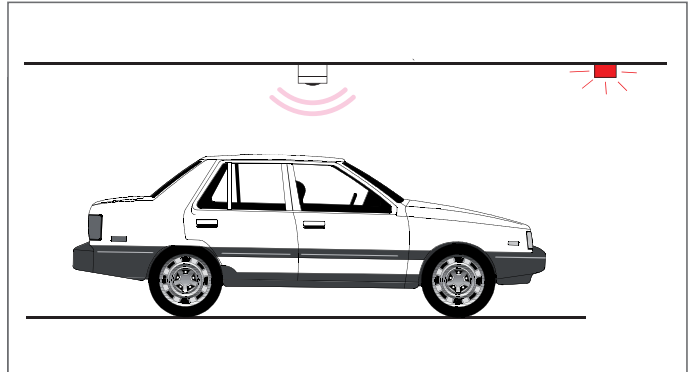
*Detects the free parking bays and  
leads the driver to them by the  
shortest possible route*





## Car Detection with Ultrasonic Sensor

The ultrasonic sensor for car detection is a key component in the guidance system. At regular intervals, the sensor emits an ultrasonic pulse and measures the time delay until the echo pulse is received. If the echo time deviates from the floor echo time measured during calibration, the sensor will assume a car is present. Multiple sensors can be calibrated simultaneously by issuing a calibration command via the network. The sensor is available with built-in LED indication for occupied/free parking bay, but in many cases it is a

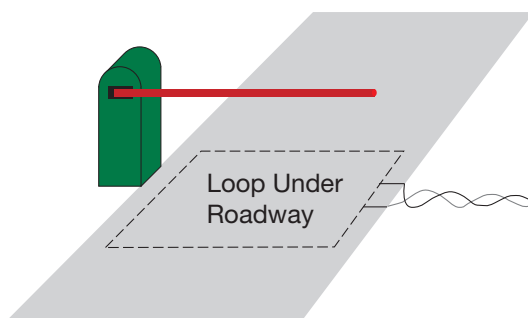


better solution in terms of visibility to use a slave LED indicator mounted externally along the carpark driveway. The sensor is equipped with a Dupline® 3-wire bus interface for power supply and communication.



## Car Detection with Loop Detector

The loop detector provides an inexpensive and reliable way to detect vehicles. It is based on an inductive measurement principle, using a coil of wire buried in the driveway and connected to the loop detector. The change in inductance when a vehicle is present will be measured as a change in frequency. The output relay operates when the loop is activated and releases again when the loop returns to non-activated condition. The loop detector is typically used to detect cars arriving in front of a gate, or to detect occupancy of outdoor parking bays. To use the loop detector in the carpark guidance system, it must be connected to the bus via an external Dupline input module.





## ***The Dupline® Carpark System Guides You to the Right Spot***

This new innovative system saves time and reduces stress for drivers by leading them to free parking bays by the shortest possible route. Networked Ultrasonic sensors monitor parking bay occupancy, and intelligent displays show the number of free places in the pointing direction, thereby preventing drivers from entering driveways or areas with no free places. The system is completely scalable and can be used within any type and size of indoor parking lot. In spite of the advanced function, the system is surprisingly easy to install and configure.

### ***Saving Time and Reducing Stress for the Drivers***

The users of busy Carparks will experience an improved parking service, resulting in a higher perceived value. Precious time is saved, the level of comfort is increased, and furthermore, the stress and emotion created by the search and “fight” for free places is avoided.

### ***Increased Productivity***

The Carpark facility can be utilized more efficiently. Parking bays can be announced free and sold faster, because availability is detected immediately when the car leaves the parking bay.

### ***Reduced Operating Cost***

With the Dupline® Carpark Guidance system, driving can be reduced by 20 %, whereby the

amount of exhaust gases decreases correspondingly.

The reduced need for ventilation provides direct savings in energy costs.

### ***Clear Indication of Free Places***

The Dupline parking system is characterized by a very clear indication of the free places. The parking bay indicators and the guidance displays are based on high-bright LEDs making them visible from a distance, and the guidance displays are featuring “moving arrows” attracting the attention of the drivers.

### ***Improved Information Level***

By use of PC software it is possible to graphically monitor the real-time status of the entire parking system from one or several central locations.

Furthermore, all parking events are recorded, thus enabling a powerful statistical analysis of the parking system performance.

### ***Easy Handling***

Easy design, planning, installation and commissioning are inherent features of the Dupline® bus. In fact, the entire carpark can be programmed and installed without the use of a PC. Addressing, testing and calibration of sensors are performed with simple handheld tools.

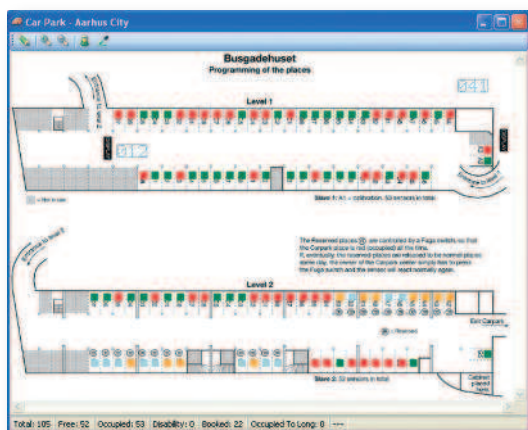
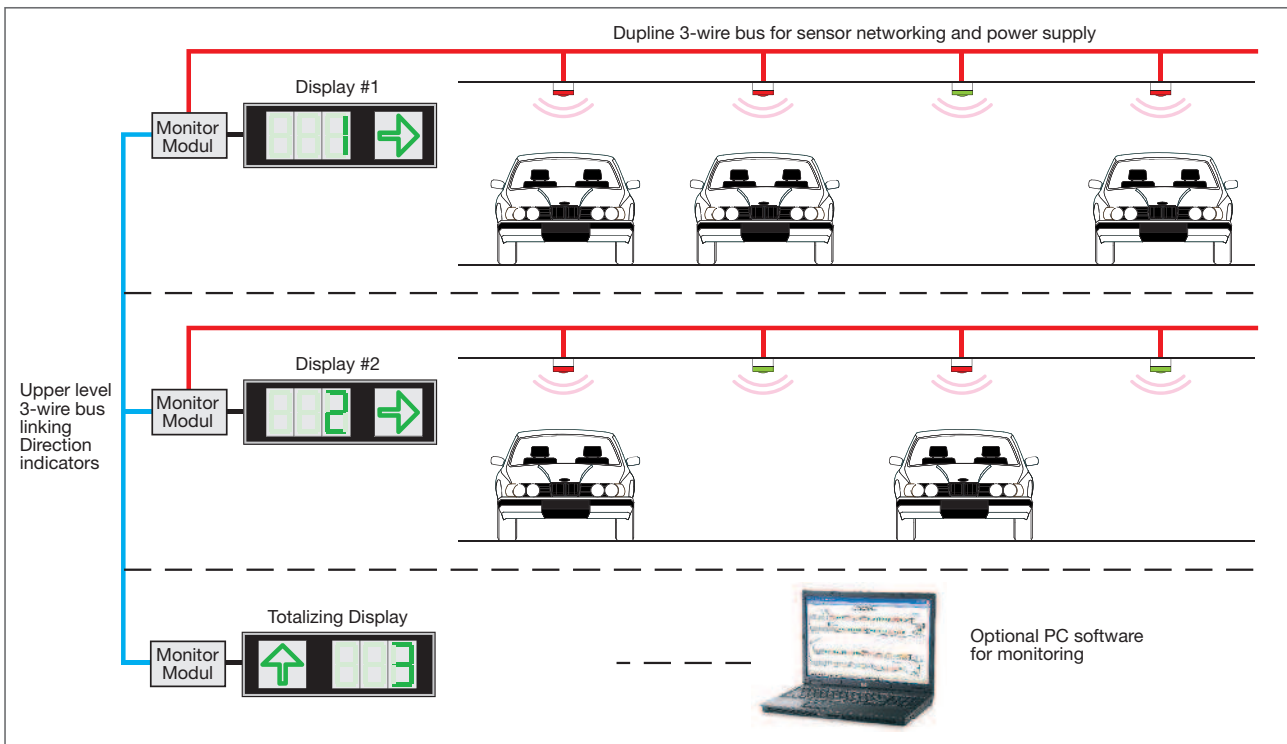
### ***Robust and Reliable System***

The products are based on Carlo Gavazzi's years of experience with sensing and communication technology within the industrial sector. The patented Dupline 3-wire bus is a proven network with more than 150.000 installations worldwide.

# Dupline<sup>®</sup> Carpark Guidance System

## Stand-Alone Solution

One segment of the Dupline 3-wire bus can link together and supply power for 123 sensors. Each segment can have several Monitor modules, which are intelligent devices programmed to monitor a certain range of sensor addresses and calculate the number of free parking bays within that segment. The Monitor module is connected to a slave display for indication of direction and number of free parking bays. The Monitor modules can be linked together via an upper level Dupline 3-wire bus, thereby enabling Master Monitor modules to add together and display the number of free parking bays from several segments. The system operates as a stand-alone solution not depending on a PC. However, it is possible to connect a PC for monitoring and booking purposes.



## PC Software for Monitoring and Control

With the PC software it is possible to monitor and control the parking system from one or several central locations. Features include monitoring of real-time status based on graphical images and key figures for the various floors and areas, monitoring of alarms, and the possibility to book places in the parking system. In order to provide useful statistical information, all parking events are stored in a database. Based on this it is possible to obtain historical reports e.g. for occupancy rates, place rotation frequencies, place popularity rates and alarms.



**GP62202201**



- Ultrasonic Sensor for detection of cars
- Networking and power supply via Dupline 3-wire bus
- Wide measuring range (0.3 to 4 m)
- Self-calibration can be performed at the individual sensor or globally (all at once)
- Emission of ultrasonic pulses is synchronized between sensors to avoid echo faults
- Available with LED light indication or with output for external LED indicator
- Available with red/green LED light or red/blue for parking bays for disabled

**GP6220....**



- LED occupancy indicator with red/green or red/blue lights
- Operates as external indicator for ultrasonic sensor type GP62x022xx
- Makes the occupancy lights visible from carpark driveways
- Powered from GP62x022xx

**GP34829091**



- Intelligent monitor module
- Networking to Ultrasonic Sensors via Dupline 3-wire bus
- Configured by the user to monitor a certain range of sensor addresses
- Option to connect slave displays type GP6763... to show the actual number and direction of free parking bays
- Option to network monitor modules to enable master monitor modules to summarize and display the number of free parking bays within a certain area.
- Power Supply: 24 VDC

**GP67630116**



- 3 digit green LED display with green arrow for showing the number of free places
- If no parking bays are available, the arrow will turn red and the digits will become red crosses
- Operating as slave display for the Direction Indicator via serial RS485 link
- Available in both indoor and outdoor versions
- With the use of dipswitches on the back of the display, it is possible to select different functions of the display e.g. running arrow up, down, left or right, steady red cross etc.
- Built into robust aluminum enclosure
- Dimensions: 145 x 430 x 60 mm
- Power Supply: 24 VDC

**GP6763xxxx**



- Different types of display that covers:
  - 1 arrow or red cross
  - 1 arrow + 2 digits
  - 1 arrow + 2 digit + handicap sign
  - 1 arrow + handicap sign
  - 8 characters + handicap sign
  - 8 characters
  - 9 characters
- Available in both indoor and outdoor versions
- Operating as slave display for the Carpark monitor via serial RS485 link
- Built into robust aluminum enclosure
- Power Supply: 24 VDC

**LDP...**



- Loop detector for detection of cars
- Detects signal from wire loop buried in the floor or driveway
- Reliable detection not influenced by the alternating seasons, weather etc.
- Automatic calibration with quick and easy setup of sensitivity
- Manual fine tuning for ignoring irrelevant objects like bicycles, trolleys etc.
- Two relay outputs: Car presence and pulse output for car leaving/entering (configurable)
- Power Supply: 24 VAC/VDC, 115 VAC, 230 VAC

## OUR SALES NETWORK IN EUROPE

**AUSTRIA** - Carlo Gavazzi GmbH  
Ketzergrasse 374, A-1230 Wien  
Tel: +43 1 888 4112  
Fax: +43 1 889 10 53  
office@carlogavazzi.at

**BELGIUM** - Carlo Gavazzi NV/SA  
Schaarbeecklei 213/3, B-1800 Vilvoorde  
Tel: +32 2 257 4120  
Fax: +32 2 257 41 25  
sales@carlogavazzi.be

**DENMARK** - Carlo Gavazzi Handel A/S  
Over Hadstenvej 40, DK-8370 Hadsten  
Tel: +45 89 60 6100  
Fax: +45 86 98 15 30  
handel@gavazzi.dk

**FINLAND** - Carlo Gavazzi OY AB  
Petaksentie 2-4, FI-00661 Helsinki  
Tel: +358 9 756 2000  
Fax: +358 9 756 20010  
myynti@carlogavazzi.fi

**FRANCE** - Carlo Gavazzi Sarl  
Zac de Paris Nord II, 69, rue de la Belle  
Etoile, F-95956 Roissy CDG Cedex  
Tel: +33 1 49 38 98 60  
Fax: +33 1 48 63 27 43  
french.team@carlogavazzi.fr

**GERMANY** - Carlo Gavazzi GmbH  
Rudolf-Diesel-Strasse 23,  
D-64331 Weiterstadt  
Tel: +49 6151 81000  
Fax: +49 6151 81 00 40  
kontakt@gavazzi.de

**GREAT BRITAIN** - Carlo Gavazzi UK Ltd  
7 Springlakes Industrial Estate,  
Deadbrook Lane, Hants GU12 4UH,  
GB-Aldershot  
Tel: +44 1 252 339600  
Fax: +44 1 252 326 799  
sales@carlogavazzi.co.uk

**ITALY** - Carlo Gavazzi SpA  
Via Milano 13, I-20020 Lainate  
Tel: +39 02 931 761  
Fax: +39 02 931 763 01  
info@gavazziacbu.it

**NETHERLANDS** - Carlo Gavazzi BV  
Wijkemeerweg 23,  
NL-1948 NT Beverwijk  
Tel: +31 251 22 9345  
Fax: +31 251 22 60 55  
info@carlogavazzi.nl

**NORWAY** - Carlo Gavazzi AS  
Melkeveien 13, N-3919 Porsgrunn  
Tel: +47 35 93 0800  
Fax: +47 35 93 08 01  
gavazzi@carlogavazzi.no

**PORTUGAL** - Carlo Gavazzi Lda  
Rua dos Jerónimos 38-B,  
P-1400-212 Lisboa  
Tel: +351 21 361 7060  
Fax: +351 21 362 13 73  
carlogavazzi@carlogavazzi.pt

**SPAIN** - Carlo Gavazzi SA  
Avda. Iparraguirre, 80-82,  
E-48940 Leioa (Bizkaia)  
Tel: +34 94 480 4037  
Fax: +34 94 480 10 61  
gavazzi@gavazzi.es

**SWEDEN** - Carlo Gavazzi AB  
V:a Kyrkogatan 1,  
S-652 24 Karlstad  
Tel: +46 54 85 1125  
Fax: +46 54 85 11 77  
gavazzi@carlogavazzi.se

**SWITZERLAND** - Carlo Gavazzi AG  
Verkauf Schweiz/Vente Suisse  
Sumpfstrasse 32,  
CH-632 Steinhausen  
Tel: +41 41 747 4535  
Fax: +41 41 740 45 40  
verkauf\_vente@carlogavazzi.ch

## OUR SALES NETWORK IN NORTH AMERICA

**USA** - Carlo Gavazzi Inc.  
750 Hastings Lane,  
USA-Buffalo Grove, IL 60089,  
Tel: +1 847 465 6100  
Fax: +1 847 465 7373  
sales@carlogavazzi.com

**CANADA** - Carlo Gavazzi Inc.  
2660 Meadowvale Boulevard,  
CDN-Mississauga Ontario L5N 6M6,  
Tel: +1 905 542 0979  
Fax: +1 905 542 22 48  
gavazzi@carlogavazzi.com

**CANADA** - Carlo Gavazzi LTEE  
3777 Boulevard du Tricentenaire  
Montreal, Quebec H1B 5W3  
Tel: +1 514 644 2544  
Fax: +1 514 644 2808  
gavazzi@carlogavazzi.com

## OUR SALES NETWORK IN ASIA AND PACIFIC

**SINGAPORE** - Carlo Gavazzi Automation  
Singapore Pte. Ltd.  
61 Tai Seng Avenue #05-06  
UE Print Media Hub  
Singapore 534167  
Tel: +65 67 466 990  
Fax: +65 67 461 980

**MALAYSIA** - Carlo Gavazzi Automation  
(M) SDN. BHD.  
D12-06-G, Block D12,  
Pusat Perdagangan Dana 1,  
Jalan PJU 1A/46, 47301 Petaling Jaya,  
Selangor, Malaysia.  
Tel: +60 3 7842 7299  
Fax: +60 3 7842 7399

**CHINA** - Carlo Gavazzi Automation  
(China) Co. Ltd.  
Rm. 2308 - 2310, 23/F.,  
News Building, Block 1,  
1002 Shennan Zhong Road,  
Shenzhen, China  
Tel: +86 755 83699500  
Fax: +86 755 83699300

**HONG KONG** - Carlo Gavazzi  
Automation Hong Kong Ltd.  
Unit 3 12/F Crown Industrial Bldg.,  
106 How Ming St., Kowloon,  
Hong Kong  
Tel: +852 23041228  
Fax: +852 23443689

## OUR COMPETENCE CENTRES & PRODUCTION SITES

Carlo Gavazzi Industri A/S  
Hadsten - **DENMARK**

Carlo Gavazzi Ltd  
Zejtun - **MALTA**

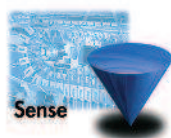
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Kaunas - **LITHUANIA**

Carlo Gavazzi Automation  
(Kunshan) Co., Ltd.  
Kunshan - **CHINA**

## HEADQUARTERS

Carlo Gavazzi Automation SpA  
Via Milano, 13 - I-20020  
Lainate (MI) - **ITALY**  
Tel: +39 02 931 761  
info@gavazzi-automation.com



**CARLO GAVAZZI**  
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Further information on  
[www.gavazziautomation.com](http://www.gavazziautomation.com) - [www.carlogavazzi.com](http://www.carlogavazzi.com)

