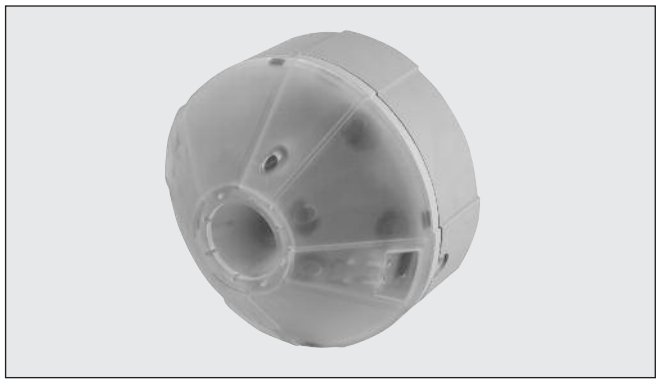
Dupline Car Park System
Type GP6220 2202
Ultrasonic Sensor with blue/red LED Indication



- **Ultrasonic sensor for detection of cars**
- **Low current consumption**
- **Self-calibration of the sensor can be performed globally on all sensors or locally on a single sensor**
- **Wide measuring range**
- **Protected against dust and moisture**
- **Dupline 3-wire system with power**
- **Adress coding with Carpark Configurator GP73800080**
- **Special sensor for reservation of parking bays**

Product Description

The ultrasonic sensor is part of the car park system which contains other variants of sensors, monitors and displays.
The GP6220 2202 sensor is installed in the middle of the ceiling above the parking bay and detects whether a car is parked in the bay. The parking bay status is indicated using the blue and red LEDs.
A blue LED indicates that the parking bay is reserved.
A red LED indicates that the parking bay is occupied or booked.
The GP6220 2202 sensor use's 2 Dupline® addresses (see under general specifications). The sensors is connected on the L_1 bus of the system. It is possible to install 123 sensors on each of the maximum 480 monitors (GP3482 9091 724) in the system.

Ordering key

GP 6220 2202 724

- **Type: Dupline®**
- **Housing**
- **Input type**
- **Addresses**
- **Inputs**
- **Supply**

Type Selection

GP6220 2202 724	**Sensor with blue/red LED**

Input/Output Specifications

RJ12 connector	for address programming with Carpark Configurator GP7380 0080
2x3-pin connector	• Printed dot on the sensor is Dupline® + • D- or Gnd • POW (power from DMM or Coupler). See drawing on page 3 (System diagram)
1x2-pin connector	Not in use for Carpark sensors GP6220 220X. See datasheet for GP6240 2224 724 or GP6289 000X

NOTE: The sensor connectors are using the "push-wire connection" methode. Use 1.5 mm^2 single core wire for the sensor installation.

Supply Specifications

Power supply:	21 VDC min.; 30 VDC max. (Overvoltage category III (IEC60664))
Consumption on the Dupline bus	0.03 mA
Max. supply current	20 mA
Nominel Supply	28 VDC / 19 mA 0,53 W

Dupline®
Fieldbus Installationbus

General Specifications

Ultrasonic frequency	40 kHz
Max. distance between ceiling and floor	4.0 m
Min. distance between ceiling and floor	1.5 m
Min. calibration distance	1.5 m
Hysterese	±30 cm
Sensor in "Lane" mode Sensor activations time	0.4 sec. with a max car speed on 20 km/hour. See fig. 2
Sensor in "Normal" mode Sensor activations time	3 sec. See fig. 1 (Default)
LED indication: Occupied/booked Reserved	 Red LED continuously lit Blue LED continuously lit

The sensor uses 2 Dupline® addresses	
• Status address	Indicates the status of the sensor. Default Dupline® address is A2
• Calibration address	For common sensor calibration. Default Dupline® address is A1
Programming unit	GP7380 0080
Synchronization Synchronization of the sensor	DMM GP3496 0005 700 provide the system with 4 x sync. addresses on respectively P5, P6, P7 and P8.

Mode of Operation

The ceramic sensor emits a signal at a frequency of 40 kHz which is reflected and returned to the sensor. The reflected signal indicates whether the parking bay is available or occupied.

Sensor addresses

• Status Dupline® addresses
Input signal which indicates the status of the parking sensor or the status of the lane sensor.
Note: Can also be used as booking of the parking bay. See explanation under booking.

• Calibration Dupline® address
The sensor is able to be calibrated locally by using of push-button on the sensor, or globally with the Carpark Configurator GP 7380 0080.
To avoid the use of many Dupline® addresses, it is recommended to either split the system into groups that can be calibrated individual or to make one big group that can be calibrated at the same time.

Synchronization of the Carpark sensor

The sensor has a built-in anti-cross-talk feature that keeps the sensors from interrupting each other. This feature is implemented in the sensor and is addressed at the same time as the "status address" is assigned.
If the sensor has the "status address" B1 the synchronization address has the address P5. See table 1 below.
The synchronization address is programmed automatically and can not be changed by the carpark Configurator GP7380 0080 without changing the "status address".
Two neighbour sensors are not allowed to use the same synchronization address, so on a line of sensors, the synchronization addresses must be changing between P5, P6, P7 and P8. (See also Fig 2 on page 4 - a programming example).
The used Master Module must be the type GP3496 0005, because this unit sends out the synchronization signals to the sensors.

Table 1

Sensor Address	Sync. Address
A1 - P1	P5
A2 - P2	P6
A3 - P3	P7
A4 - P4	P8
A5 - O5	P5
A6 - O6	P6
A7 - O7	P7
A8 - O8	P8

Modes

The sensor has two modes. Lane mode or Normal mode.

In ***Normal mode***, the sensor detects the presence of a car in the parking bay and lights the red LED. See fig. 1 on page 4. At the same time the sensor sends a signal out on the L_1 bus. When the parking bay is empty the LED will change to blue and also send a signal out on the L_1 bus.
The sensor will not react to objects lower than 0,3 m.
To avoid a weak signal, the sensor must be installed pointing directly at a hard surface, as for instance concrete. A soft or uneven surface will reduce the signal.

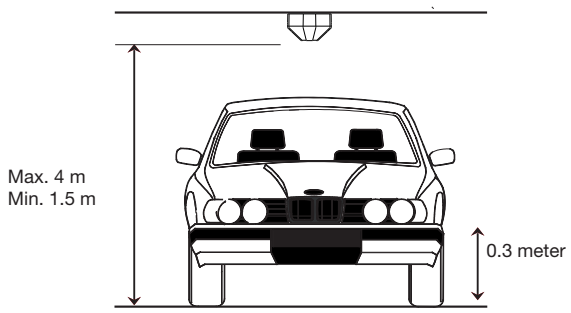
In ***Lane mode***, the sensor is designed to be mounted in the ceiling above the lane. The sensor is able to detect moving cars with a maximum speed of 20 km/hour. See fig. 2 on page 4.
When the sensor detects a moving car it sends a signal to the Carpark system that count down the total amount of free places, and show the reduced amount on the local display but also on the display that show the total amount of free places.
This is to prevent to many moving cars in a specific carpark area. The sensor does not show the actual status on the LED's. The LED's only works as feedback during calbration, start-up and show the fail status.

Booking

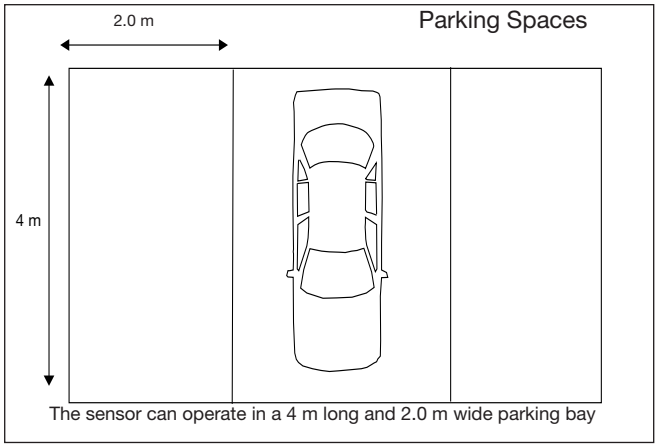
The sensor also read the L_1 bus, so the user has the possibility to reserve a parking space, by using the same address. The sensor uses the "pulse stretch" technic, to administrate wether the sensor is occupied by a car or reserved via the Dupline® bus.

When a car leaves the parking bay, the sensor will continue being red for 3 seconds before turning into blue.

The sensor is designed to work in an area which is:

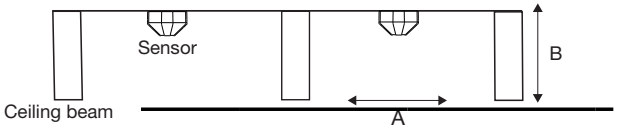


The sensor will not react to objects lower than 0.3 m.



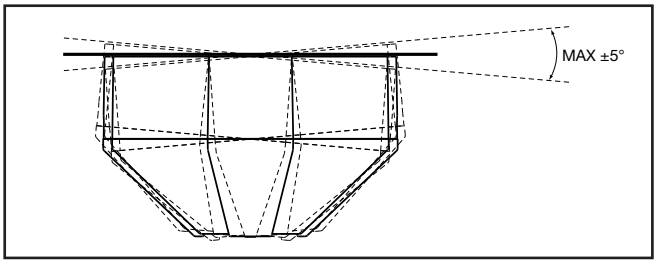
The sensor can operate in a 4 m long and 2.0 m wide parking bay

The sensor should be placed freely, e.g. in the following way:



A = Min. 2 m between ceiling beams
B = Max. 50 cm high ceiling beams

Mounting sensor



To receive the best signal, the sensor must be installed with an angle on the ceiling on maximum ±5°.

Calibration

The sensor is self-callibrating. It is important to perform the calibration when the parking bay is empty.

There are two ways of calibrating a sensor .

Manual calibration is a local calibration of the single sensor.

- Push the button on the out side of the sensor.
- The LED flashes blue for 30 seconds with 1 Hz. (The electrician has time to get clear of the sensor before the calibration starts).
- The calibration starts when the LED flashes blue for 6 seconds with 4 Hz.
- If the calibration is OK, the LED will respond with a constant blue light.

Error messages:

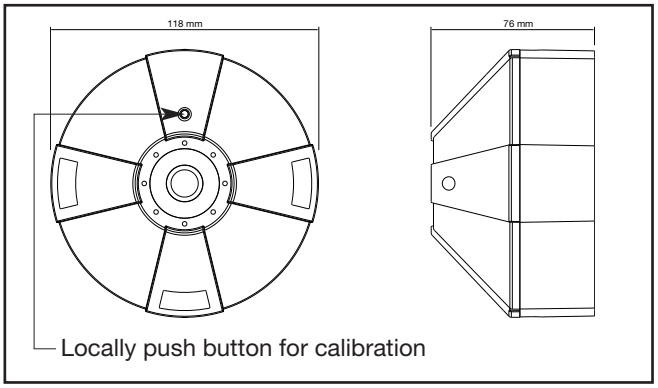
- If the calibration fails, the LED will respond with a constant flashing red light. If the LED flashes red, the sensor could be out of range or the sensor is not aligned correctly.
- Adjust the sensor into the sensing area and recalibrate the sensor.
- If Dupline® is not connected/defect the LED will flash red.
- If Dupline® is short circuit the LED will flash red.
- Sensor first time start up. The sensor LED will flash red because it's needs calibration.

Automatic calibration with the Carpark Configurator GP 7380 0080 is a global calibration of all connected sensors. The parking bay must be empty during the calibration process.

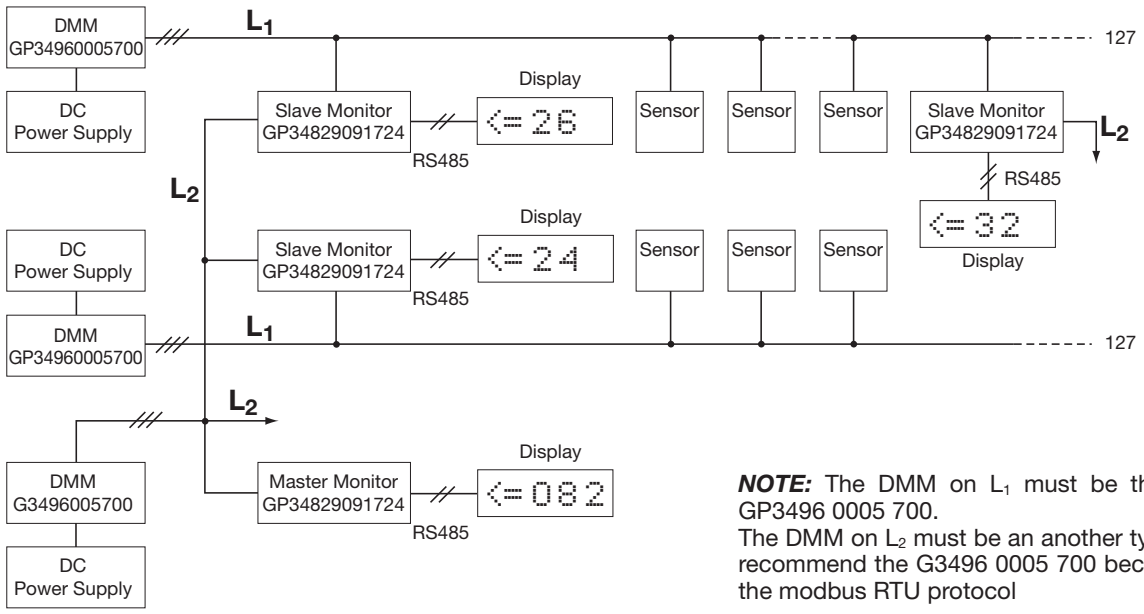
Environment

- **Protection: IP 34**
- **Operating temperature: -40°C to 70°C**
- **Storage temperature: -40°C to 85°C**
- **Pollution Degree: 3 (IEC 60664)**
- **Dimensions: Ø118 x 76 mm**
- **Material: The case is made of polypropylene. The sensor lid is made of clear Polycarbonate.**

Dimensions

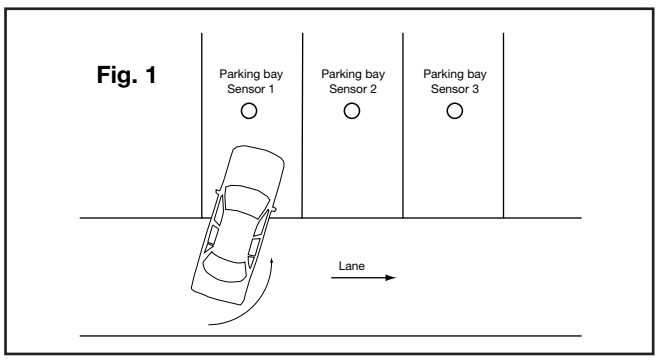


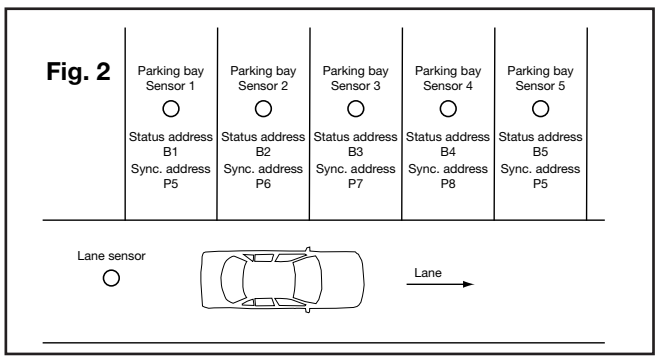
System Diagram



NOTE: The DMM on L_1 must be the type GP3496 0005 700.
The DMM on L_2 must be an another type. We recommend the G3496 0005 700 because of the modbus RTU protocol

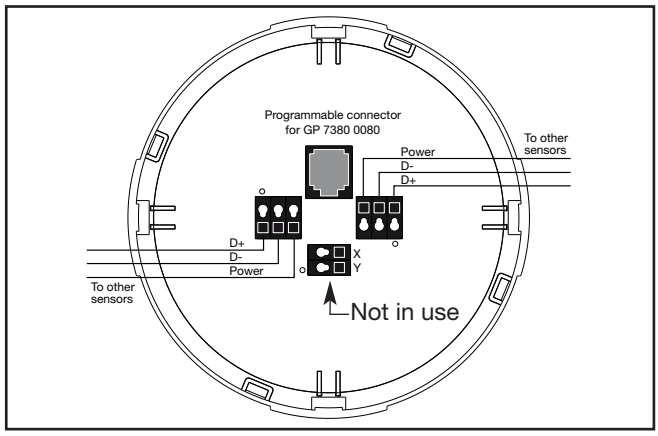
Fig. 1 and Fig. 2





The sensors can be used as both parking bay and lane sensors.
See the manual how to program the sensors.
The sensors are equal to each other.
It is only the programming that makes them different from each other.

Wiring Diagram



Note: The 2 x 3 pin connector are internally connected on the PCB.
Note: X and Y is not in use for model number GP6220 2202 and GP6220 2202
NOTE: The wiring of the sensors must always be made with 1.5 mm^2 single core wire

Bottom part: mounted in ceiling