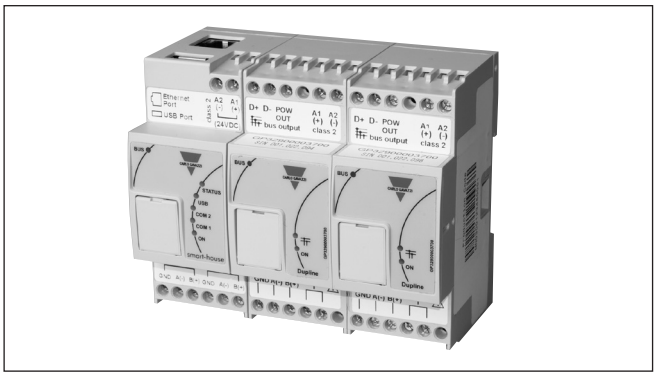
Dupline® Carpark
Master Zone Counter (MZC)
Type GPMZC-SET (complete)



- **Controller in the Dupline® zone counting system**
- **Micro Linux PC with Ethernet port and Web-server**
- **Connects up to 120 count sensors via Dupline® L_1 3-wire bus**
- **Dupline® ultrasonic carpark sensors can be used directly on the L_1 bus**
- **Loop detectors or Photoelectric sensors can be used when connected to Dupline® L_1 input module**
- **Manages up to 3840 parking spaces in multiple zones**
- **Each zone can have multiple entry and exit points**
- **Easy configuration, monitoring and count adjustment via web-server**
- **Mixed systems with zone counting and single space detection possible**
- **Option to detect the split between handicap and standard spaces occupancy**
- **Optional PC software for real-time monitoring and historical occupancy data analysis**

Product Description

The GPMZC-SET is a programmable integrated unit specially designed for Carpark applications. The GPMZC-SET is a combination of 3 modules, one controller and two channel generators for the L_1 and L_2 bus. The controller includes dedicated functions for counting based on the count sensors connected to the L_1 bus. A web-server in the controller gives the user unique opportunity to modify or monitor the zone count system using a Smartphone or other Ethernet based equipment. The two galvanic separated channels generators supply the two busses L_1 and L_2 with power and Dupline®.
The GPMZC-SET can easily be combined with the single spot Detection system. The data from the systems can be monitored and controlled from the Dupline® Carpark Software.

Ordering Key

GPMZC-SET

Type Selection

Housing	Mounting	Supply: 24 VDC ± 20%
2 DIN	DIN-rail	**GPMZC-SET**

Count Module: GP32950030700

Supply Specifications

Power supply	Overvoltage cat. II (IEC 60664-1, par. 4.3.3.2)
Rated operational voltage	15 to 24 VDC ± 20%
Rated impulse voltage	500V (1,2/50µs) (IEC 60664-1, tab. F.1)
Rated operational power	5 W

Reverse polarity protection	Yes
Connection	A1 (+) and A2 (-)
Power off delay	1 s

Main Hardware Characteristics

Memory	Micro SD not in use
Communication ports	
RS485	2 ports
Ethernet	1 port, for Internet/LAN connection
Auxiliary bus	HS BUS
Right side	Compatible with GP32900003700
USB ports	
Mini USB	Only for internal use
Host function	Not in use

RS485 Communications Ports

Number of ports	2	Data format	Selectable: 1 start bit, 7/8 data bit, no/odd/even/ parity,1/2 stop bit
Purpose	COM1: Modbus slave COM2: Modbus slave		
Type	Multidrop, bidirectional	Baud-rate	9600 bits/s
Connections	2-wire. Max. distance 1000m	Insulation	See the table “Insulation between inputs and outputs”
Protocol	MODBUS RTU		

Ethernet Port

Rated inputs	HTTP	WEB server	80 20
IP configuration	Static IP / Netmask / Default gateway	Connections	RJ45 10/100 BaseTX Max. distance: 100m
DNS	Primary and secondary DNS as a static or dynamic management (using DHCP server if configured)	Insulation	See “Insulation between inputs and outputs” table.
	Port N. of connections		

HS Bus Specs (right side)

Bus type	RS485 high speed bus
Function	Connection to master channel generator module GP32900003700
Connection	By local bus on the right side
Note:	The two GP32900003700 modules which drive the L1 and L2 buses must be connected on the right side of the GP32950030700

LEDs Indication

Green LED: ON
ON: power ON
OFF: power OFF

Yellow LEDs:
COM 1
OFF: no communications on RS485 A
Flashing: 200ms ON 600ms OFF, no answer from the slave
Flashing: 200ms ON 200ms OFF, communications OK

COM 2
OFF: no communications on RS485 B
Flashing: 200ms ON 600ms OFF, no answer from the slave
Flashing: 200ms ON 200ms OFF, communications OK

BUS
OFF: no communication is present on the HS BUS
ON: communication error on HS BUS
Flashing: communication OK on HS BUS

Blue LED: USB
Not in use

Red LED: STATUS
Not in use

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GP32950030700 Based Insulation between Inputs and Outputs

Type of input/output	DC Power supply	RS485 - COM 1	RS485 - COM 2	Ethernet	USB port "H"
DC Power supply	-	2kV	2kV	0.5kV	0kV
RS485 - COM 1	2kV	-	0.5kV	2kV	2kV
RS485 - COM 2	2kV	0.5kV	-	2kV	2kV
Ethernet (LAN/Internet)	0.5kV	2kV	2kV	-	0.5kV
USB port "H" (Host)	0kV	2kV	2kV	0.5kV	-

0kV	Inputs / outputs are not insulated
2kVrms	EN61010-1, IEC60664-1 - over-voltage category III, pollution degree 2, double insulation on systems with max. 300Vrms to ground
0.5kVrms	The insulation is functional type

General Specifications

Operating temperature	-20 to +50°C (-4°F to 122°F) (R.H. < 90% non-condensing @ 40°C)
Storage temperature	-30 to +70°C (-22°F to 158°F) (R.H. < 90% non-condensing @ 40°C)
Over voltage category	Cat. III (IEC 60664, EN60664) For inputs from string: equivalent to Cat. I, reinforced insulation.
Dielectric strength	4000 VAC RMS for 1 minute
Noise rejection	
CMRR	65 dB, 45 to 65 Hz
Standard compliance	
Safety	IEC60664, IEC61010-1 EN60664, EN61010-1
Protection degree	
Front	IP40
Screw terminals	IP20
Housing	
Dimensions (WxHxD)	35 x 90 x 63.5 mm (2-DIN module)
Material	Noryl, self-extinguishing: UL 94 V-0

Weight	Approx. 150 g (packing included)
Mounting	DIN-rail
Approvals	cULus, according to UL60950 **UL notes:** Max room temperature: 40°C Equipment must be supplied by a separately certified NEC class 2 (LPS) power unit.
CE Marking	Yes
EMC	
Immunity	EN 61000-6-2
- Electrostatic discharge	EN 61000-4-2
- Radiated radiofrequency	EN 61000-4-3
- Burst immunity	EN 61000-4-4
- Surge	EN 61000-4-5
- Conducted radio frequency	EN 61000-4-6
- Power frequency magnetic fields	EN 61000-4-8
- Voltage dips, variations, interruptions	EN 61000-4-11
Emission	EN 61000-6-3
- Conducted and radiated emissions	CISPR 22 (EN55022), cl. B
- Conducted emissions	CISPR 16-2-1 (EN55016-2-1)
- Radiated emissions	CISPR 16-2-3 (EN55016-2-3)

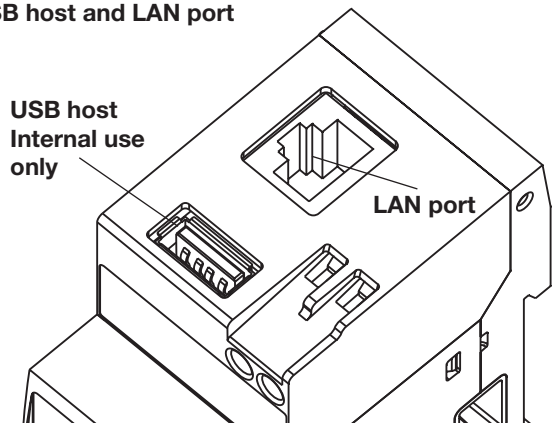
Connections

Ethernet	RJ-45 connector (10/100Base-T)
USB	High speed USB 2.0
RS485	3 screw terminals per port
Cable cross-section area	1.5 mm^2 max
Screws tightening torque	Min. 0.4 Nm, Max. 0.8 Nm

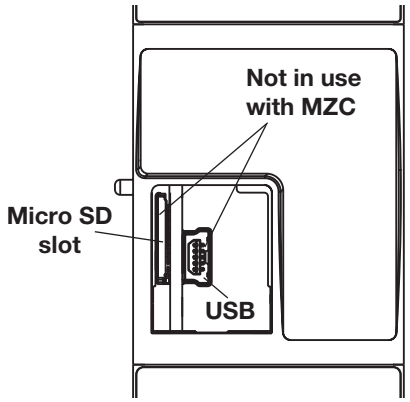
Power supply	2 screw terminals
Cable cross-section area	1.5 mm^2 max
Screws tightening torque	Min. 0.4 Nm, Max. 0.8 Nm

Connections

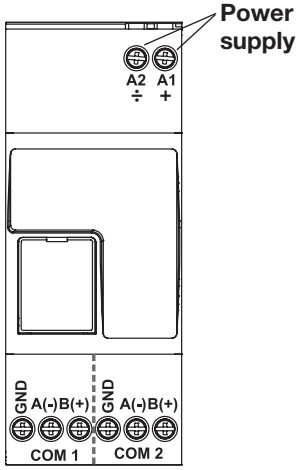
USB host and LAN port



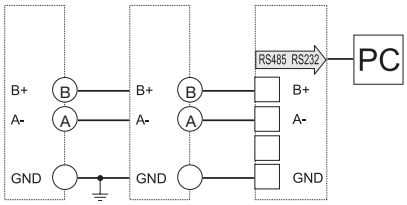
Micro SD slot and USB



Frontal connectors



RS485 port COM1 and COM2



Channel Generator for Dupline® bus L_1 and L_2: GP32900003700

Supply Specifications

Power supply	Overvoltage cat. II (IEC 60664-1, par. 4.3.3.2)
Rated operational voltage	24 VDC ± 20%
Rated impulse voltage tab. F.1)	500V (1,2/50µs) (IEC 60664-1,
Rated operational power	6.5 W
Protection for reverse polarity	Yes
Connection	A1 (+) and A2 (-)
Power on delay	Typ. 20 s
Power off delay	1 s

Voltage	8.2 V
Maximum Dupline® voltage	10 V
Minimum Dupline® voltage	4.5 V
Maximum Dupline® current	450 mA
Maximum current on pow	< 3.0 A
Terminal	D+, D- and pow out

Note: The Dupline® bus is located on the upper connector and also on the local bus connector on the right side of the module.

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General Specifications

Installation category	Cat. II
Dielectric strength	
Power supply to Dupline® and Dupline® to Output	500 V AC for 1 min. 500 V impulse 1.2/50µs (IEC60664-1, TAB. A.1)
Fail-safe condition	If the GP32900003700 looses the communication with the GP32950030700, the Dupline® output will be switched off. In this situation all the modules connected to the bus will go into the fail-safe output status.
Environment	
Degree of protection	
Front	IP 50
Screw terminal	IP 20
Pollution degree	2 (IEC 60664-1, par. 4.6.2)
Operating temperature	-20° to +50°C (-4° to 122°F)
Storage temperature	-50° to +85°C (-58° to 185°F)
Humidity (non-condensing)	20 to 80% RH
LED's indication	
BUS	1 yellow LED
Power	1 green LED
Dupline®	1 yellow LED
Connection	
Terminal	12 screw-type
Cable cross-section area	Max. 1.5 mm^2
Tightening torque	0.4 Nm / 0.8 Nm
Housing	
Dimensions (WxHxD)	35 x 90 x 63.5 mm (2-DIN module)
Material	Noryl
Weight	150 g
Approvals	cULus, according to UL60950 **UL notes:** Max ambient temperature: 40°C Equipment must be supplied by a separately certified NEC class 2 (LPS) power unit
CE Marking	Yes
EMC	
Immunity	EN 61000-6-2
- Electrostatic discharge	EN 61000-4-2
- Radiated radiofrequency	EN 61000-4-3
- Burst immunity	EN 61000-4-4
- Surge	EN 61000-4-5
- Conducted radio frequency	EN 61000-4-6
- Power frequency magnetic fields	EN 61000-4-8
- Voltage dips, variations, interruptions	EN 61000-4-11
Emission	EN 61000-6-3
- Conducted and radiated emissions	CISPR 22 (EN55022), cl. B
- Conducted emissions	CISPR 16-2-1 (EN55016-2-1)
- Radiated emissions	CISPR 16-2-3 (EN55016-2-3)

HS Bus Specifications

Bus type	RS485 high speed bus
Protocol	Internal proprietary protocol
Connection	By local bus (left and right connectors) or terminals GND, A(-), B(+). T1, T2: termination inputs. They have to be short-circuited on the last module of the network. See wiring diagrams.

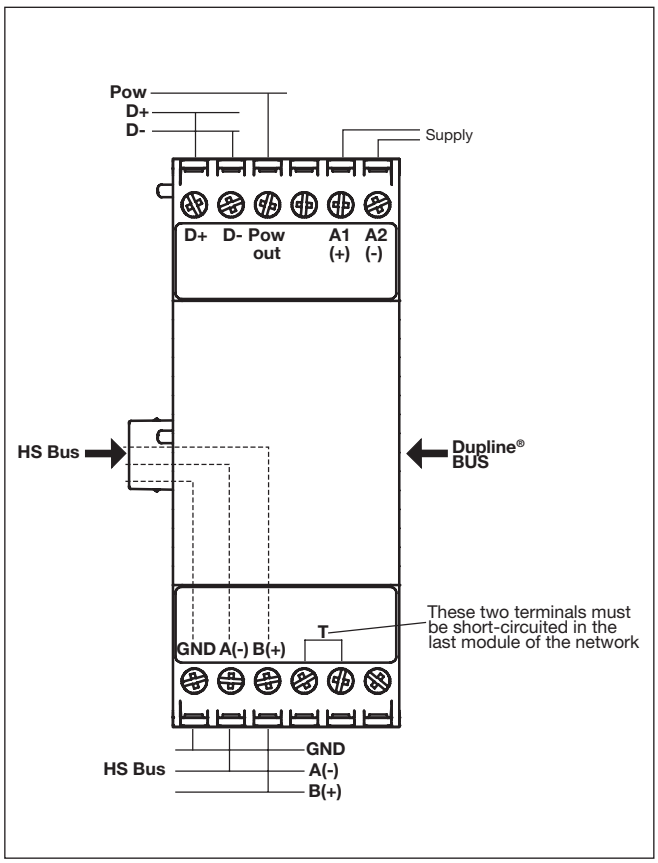
LEDs Indication

Green LED: ON.
ON: Supply ON
OFF: Supply OFF

Yellow LED
Dupline® bus
ON: the Dupline® bus is working properly
Flashing: there is a fault on the Dupline® bus
OFF: the Dupline® bus is OFF or not connected.

Yellow LEDs
Bus
OFF: no communication is present on the HS bus
ON: communication error on HS bus
Flashing: communication OK on HS bus

Wiring Diagrams



For both GP32900003700 and GP32950030700

Mode of Operation

The GPMZC-SET is a dedicated unit for Dupline® Zone Counting.
The unit consists of 3 modules

1 x GP3295 0030 700 - Carpark counter
1 x GP3290 0003 700 - Carpark master channel generator (CMCG) for L_1
1 x GP3290 0003 700 - Carpark master channel generator (CMCG) for L_2

The counter is the intelligent part where all the programming takes places. The two Master channel generators supply the L_1 and L_2 bus respectively with Dupline® and 24VDC power. The Master channel Generators are not galvanically separated so it is essential to use individual supplies to power the modules. See MZC installation manual for further information on this topic.

The counter module can be programmed by any kind of PC connected to LAN or WAN by using a standard browser like Explorer or Mozilla Firefox. Refer to the MZC installation manual for further information on accessing and programming the Counter module.
The GPMZC-SET can be used as a stand-alone counting system. The Stand-alone solution can count up to 3,840 places and is able to use any counting sensor e.g. ultrasonic, optical and loop detectors. The master-zone countersystem (MZC) combined with the Dupline® Spot detection system can monitor and control more than 50,000 places using the Dupline® Carpark Software. Refer to the Carpark Installation Manual for more information on this subject.

Dimensions