Detector magnetic DM-21xC, Sensor for measurement of vehicle presence (DM-211C) to be installed into the surface layer of the pavement. The detection principle is based on continuous measurement of geomagnetic field.

The same hardware as DM-211C, with firmware upgrade could be used as well for traffic census – type DM-216C. To measure speed and length of the vehicle the two detectors units DM-216C in a row needs to be installed (4m distance between sensors is recommended).

**Technical parameters:**

- **Installation:** intrusive, by pavement drilling, 100 mm in diameter
- **Lifetime:** guaranteed 10 years (projected 15 years) - measurement of vehicle presence guaranteed 3 years - traffic census
- **Power supply:** battery, lithium-thionyl chlorid (Li-SOCl2)
- **Communication:** RF 868/916 Mhz (conforming to VO-R/10/09.2010-11); SIGFOX ready
- **Operation temperature:** −40 °C / +85 °C
- **Dimensions:** diameter 97 mm, height 200 mm
- **Weight:** max. 1 kg
- **Coating:** material ABS, IP68, black
**Collector MASTER CM 121x,**
Data collector and control unit for management of communication among installed components of the parking system. It transfers real time data for further processing (export in DATEX II, remote control). The recommended number of managed detectors is up to 200.

**Technical parameters:**

Installation: on a pole/post

Power supply: accumulator

Recharging variants: photovoltaic panel (50W), public lights supply

Communication: RF 868/916 Mhz (conforming to VO-R/10/09.2010-11), 3G/EDGE/GPRS

Operation temperature: −40 °C / +55 °C

Dimensions: 300 x 220 x 120 mm

Weight: max. 3 kg (without accumulator, without photovoltaic panel)
Master VO (Street lamp charge)

IP: IP56
Operating temperature: -25 °C to +55 °C
Dimensions: 300 x 400 x 160 mm (W x H x D), without antennas
Weight: 20 kg max

Charger:
DC charging current: 1.6 A max
Charging voltage DC: max 14.4 V temperature compensated

Battery: Lead
DC Nominal voltage: 12V
Nominal capacity: 20Ah at 25 °C
Type: FG12200, FG - FORTE

Power supply:
Rated voltage: AC 230 V / 50 Hz
Rated current: AC 30 mA (battery charge)

Power supply terminal block:

<table>
<thead>
<tr>
<th>contact</th>
<th>marking</th>
<th>description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>L</td>
<td>phase conductor</td>
</tr>
<tr>
<td>2</td>
<td>N</td>
<td>neutral conductor</td>
</tr>
<tr>
<td>3</td>
<td>PE</td>
<td>protective earthing conductor</td>
</tr>
</tbody>
</table>

Other parameters are the same parameters MASTER SOLAR.
Master SOLAR

Parametry:
- IP: IP56
- Operating temperature: -25 °C to +55 °C
- Humidity: max 95% at 25 °C, noncondensing
- Dimensions: 300 x 400 x 200 mm (W x H x D), without antennas
- Weight: max 30 kg (including Battery and 60W photovoltaic panel)

Charger:
- Charging circuitry ensures UC2906DW
- Charging current DC: max. 3 A
- Charging voltage DC: max. 14.4 V temperature compensated
- Energy monitoring: INA219BIDCNT, connected to the I2C storing the battery information in memory FRAM

Battery protection:
- Isolation voltage: DC 10.6 V +/- 2% (deep discharge protection)
- DC supply voltage: 12.0 V +/- 2% (load reconnection after partial charge)
- Fuse: 4A, Polyswitch resettable fuse

Battery:
- Pb, maintenance-free
- DC Nominal voltage: 12V
- Nominal capacity: 33Ah at 25 °C
- Type: 6FG33, FG-FORTE

Lithium battery backup time clock (RTC):
- DC Rated voltage: 3V
- Type: CR2032

Connectivity:
- 3G GSM modem: QUECTEL U10 is connected to the USB
- 2G GSM modem: QUECTEL M95, connected via USB FT2321R
- on / off Modem: using the pin GPIO17 at RPI

Modem is part of the RTC circuit

Connector for SIM card: ATTEND, 115A-R02-ADA0

COM port RS 232: CANNON 9 male
## Pin Marking Description

<table>
<thead>
<tr>
<th>pin</th>
<th>marking</th>
<th>description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>NC</td>
<td>not connected</td>
</tr>
<tr>
<td>2</td>
<td>Rx</td>
<td>receive data</td>
</tr>
<tr>
<td>3</td>
<td>Tx</td>
<td>transmit data</td>
</tr>
<tr>
<td>4</td>
<td>NC</td>
<td>not connected</td>
</tr>
<tr>
<td>5</td>
<td>GND</td>
<td>ground</td>
</tr>
<tr>
<td>6</td>
<td>NC</td>
<td>not connected</td>
</tr>
<tr>
<td>7</td>
<td>-5 V</td>
<td>voltage -5 V, max -1 mA</td>
</tr>
<tr>
<td>8</td>
<td>+5 V</td>
<td>voltage +5 V, max 1 mA</td>
</tr>
<tr>
<td>9</td>
<td>+5 V</td>
<td>voltage +5 V, max 10 mA</td>
</tr>
</tbody>
</table>

**Connektor SIM for HF module IQRF: ATTEND 115C-BC00-R**

<table>
<thead>
<tr>
<th>pin</th>
<th>marking</th>
<th>description</th>
</tr>
</thead>
<tbody>
<tr>
<td>C1</td>
<td>PWM_IN</td>
<td>IN, connected to RPi GPIO18</td>
</tr>
<tr>
<td>C2</td>
<td>C2_TR</td>
<td>IN/OUT, connected to RPi GPIO21</td>
</tr>
<tr>
<td>C3</td>
<td>3V</td>
<td>supply 3V, drive by RPi GPIO22, log 1 = ON, log 0 = OFF</td>
</tr>
<tr>
<td>C4</td>
<td>GND</td>
<td>ground supply</td>
</tr>
<tr>
<td>C5</td>
<td>/SS0</td>
<td>SPI signal, connected to RPi /SS0</td>
</tr>
<tr>
<td>C6</td>
<td>SCK</td>
<td>SPI signal, connected to RPi /SCK</td>
</tr>
<tr>
<td>C7</td>
<td>SDI</td>
<td>SPI signal, connected to RPi SDI</td>
</tr>
<tr>
<td>C8</td>
<td>SDO</td>
<td>SPI signal, connected to RPi SDO</td>
</tr>
</tbody>
</table>
Hardware WATCHDOG
Activated by jumper
Connected to the RPI GPIO4, default set-up LOG 1
The setting is done by pulse LOG 0, length 0.5 sec., every 120 sec., otherwise after about 360 sec. the power supply is disconnected for about 15 seconds.

Antenna:
Antenna for GSM: 2G, 3G, 2 dBi
Antenna for IQRF: patch antenna, RHCP, 3 dBi, manually swiveling bracket

Power supply:
Nominal voltage: 17V DC, 17V AC
Nominal current: 250 mA (if battery charged)

Power supply terminal block:

<table>
<thead>
<tr>
<th>contact</th>
<th>marking</th>
<th>description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>AC1</td>
<td>PV panel + pole</td>
</tr>
<tr>
<td>2</td>
<td>AC2</td>
<td>NC</td>
</tr>
<tr>
<td>3</td>
<td>0 V</td>
<td>PV panel – pole</td>
</tr>
<tr>
<td>4</td>
<td>+ A</td>
<td>accumulator + pole</td>
</tr>
<tr>
<td>5</td>
<td>- A</td>
<td>accumulator - pole</td>
</tr>
</tbody>
</table>

System connector:
It is designed to connect to the RASPBERRY Pi (RPI).
In total connector has 26 contacts and connections to the RPI is carried out by IDC flat cable.
RPI is charged through this connector via 1A fuse.
Collector SLAVE CS 126xF
RF signal repeater. It provides the data transfer from detectors. It guarantees the coverage of RF signal by using its technology of wireless MESH network. It is an auxiliary component for bigger installations – the recommended number of managed detectors is up to 50.

Technical parameters:

Installation: on a pole (CS 1262F) / cartridge into eg. traffic sign pole (CS 1264F)

Power supply: accumulator

Recharging variants: photovoltaic panel (5W), public lights supply

Communication: RF 868/916 Mhz (conforming to VO-R/10/09.2010-11), 3G/EDGE/GPRS

Operation temperature: −40 °C / +55 °C

Dimensions: 240 x 190 x 90 mm

Weight: max. 3 kg (without photovoltaic panel)