Quick Guide
GPS09c Pro Open
Release 1.03

1 – Available kits and spare parts

1.1 – Available kits

GPS09c Pro Open is available in different versions and with different kits:

GPS09c Pro Open standard CAN version
- GPS09c Pro Open+ 200cm CAN cable   **X40GPS09OPSCO20**
- GPS09c Pro Open+ 400cm CAN cable   **X40GPS09OPSCO40**

GPS09c Pro Open standard RS232 version
- GPS09c Pro Open + 200cm RS232 cable   **X40GPS09OPSRS20**

GPS09c Pro Open roof CAN version
- GPS09c Pro Open roof version + 200cm CAN Cable   **X40GPS09OPRCO20**
- GPS09c Pro Open roof version + 400cm CAN Cable   **X40GPS09OPRCO40**

GPS09c Pro Open roof RS232 version
- GPS09c Pro Open + 200cm RS232 cable   **X40GPS09OPRRS20**

1.2 – Spare parts

Available spare parts are:
- 50 cm Open CAN cable   **V02551670**
- 100 cm Open CAN cable   **V02551760**
- 200 cm Open CAN cable   **V02551770**
- 400 cm Open CAN cable   **V02551780**

- 50 cm AiM CAN cable   **V02551830**
- 100 cm AiM CAN cable   **V02551840**
- 200 cm AiM CAN cable   **V02551850**
- 400 cm AiM CAN cable   **V02551860**

- 50 cm RS232 Open cable   **V02551790**
- 100 cm RS232 Open cable   **V02551800**
- 200 cm RS232 Open cable   **V02551810**
- 400 cm RS232 Open cable   **V02551820**

- 30 cm USB cable   **V02551690**

2 – The system

GPS09c Pro Open features a 6 axis inertial platform and three output streams:

- CAN open connection, freely user configurable; it works as any CAN output; IMU data available through CAN Connection at 100Hz (GPS09c Pro and GPS09c Pro Open only) are:
    - Acceleration X
    - Acceleration Y
    - Acceleration Z
    - Pitch rate
    - Yaw rate
    - Roll rate
- RS232 Open connection, freely user configurable
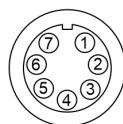- CAN AiM connection, to be connected as expansion using the AiM CAN network

The Module comes with a 7 pins Binder 712 female connector whose pinout is shown here below.
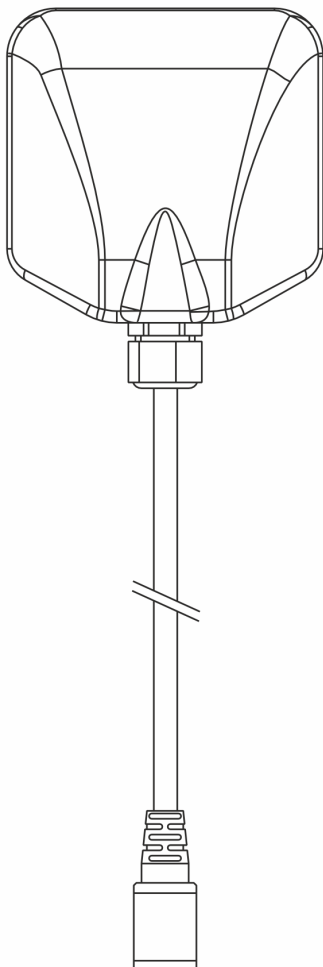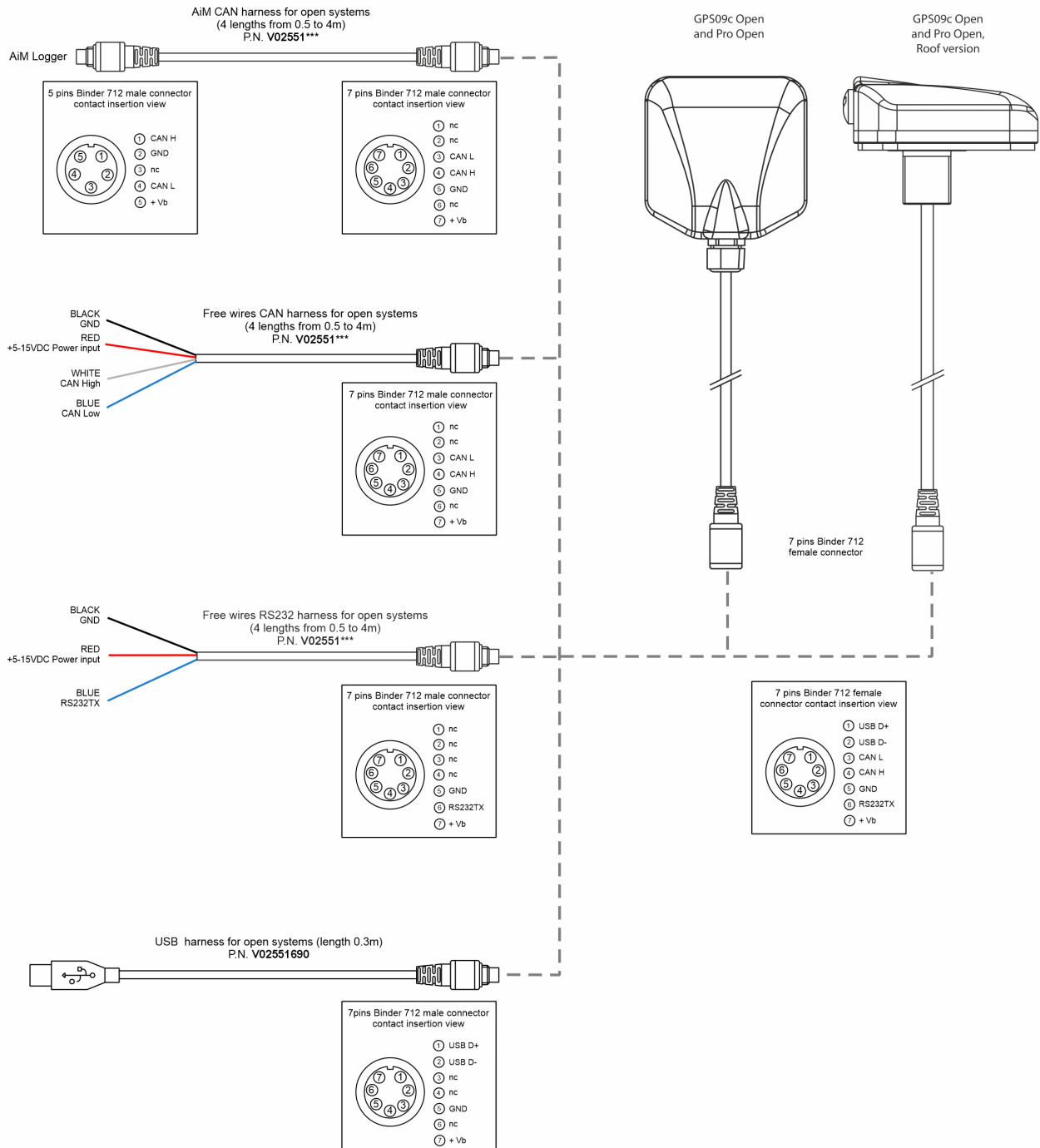
GPS09c Pro Open,
standard and roof version
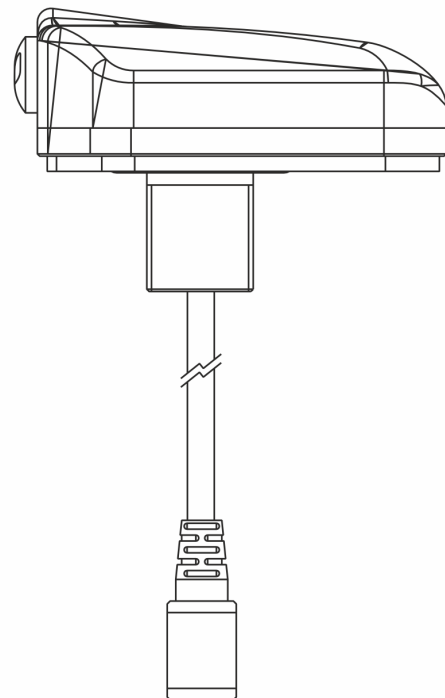
7 pins Binder 712
female connector
(external view)

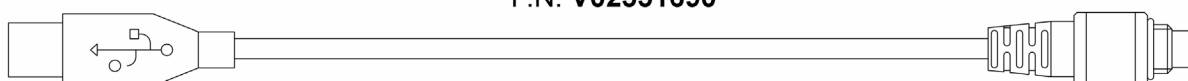| 1 | USB D+ |
2	USB D-
3	CAN L
4	CAN H
5	GND
6	RS232TX
7	+Vb

The Module Binder connector is to be plugged in the proper cable, according to the connection to be managed.
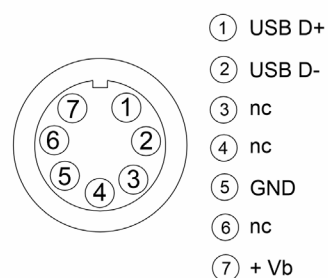
3 – Configuration

In order to configure GPS09c Pro Open you need to connect it to your PC using the proper USB cable shown below.

USB harness for open systems (lenght 0.3m)
P.N. **V02551690**

7 pins Binder 712 male connector
contact insertion view

① USB D+
② USB D-
③ nc
④ nc
⑤ GND
⑥ nc
⑦ + Vb

Once GPS09C Pro Open connected to the PC run RaceStudio 3 software to configure it and:

- Press "New Configuration"
- Scroll the panel that is prompted to select GPS09c Pro Open
- Press "OK"
- A panel where comments can be filled in is prompted: fill in comments if desired or press "OK".
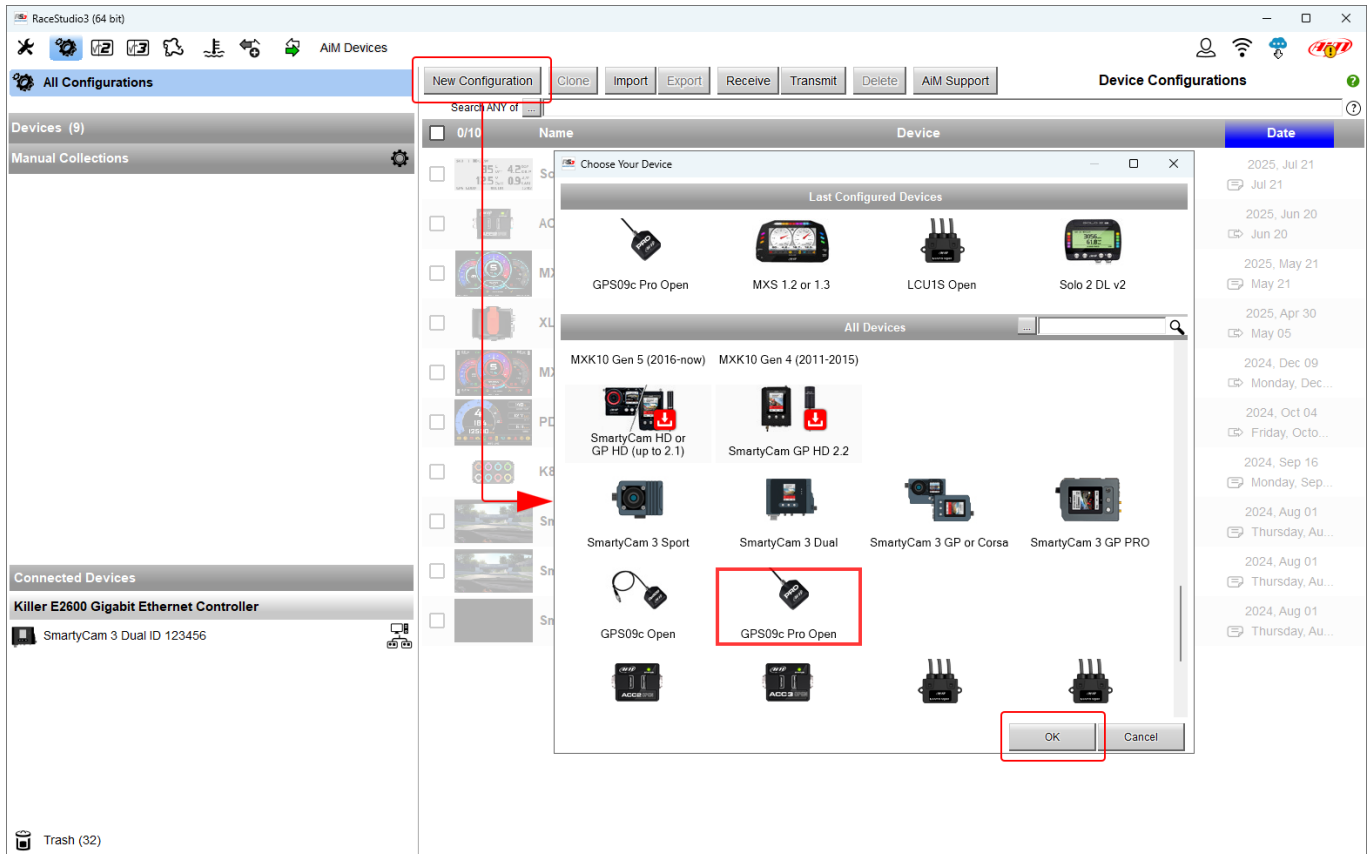
3.1 – CAN open connection (default)

Selecting "CAN Open" stream you may configure the CAN messages you need. To do so press "Add New Payload" and a setting panel is prompted. It is possible to set the baud rate for the CAN bus and, for every message:
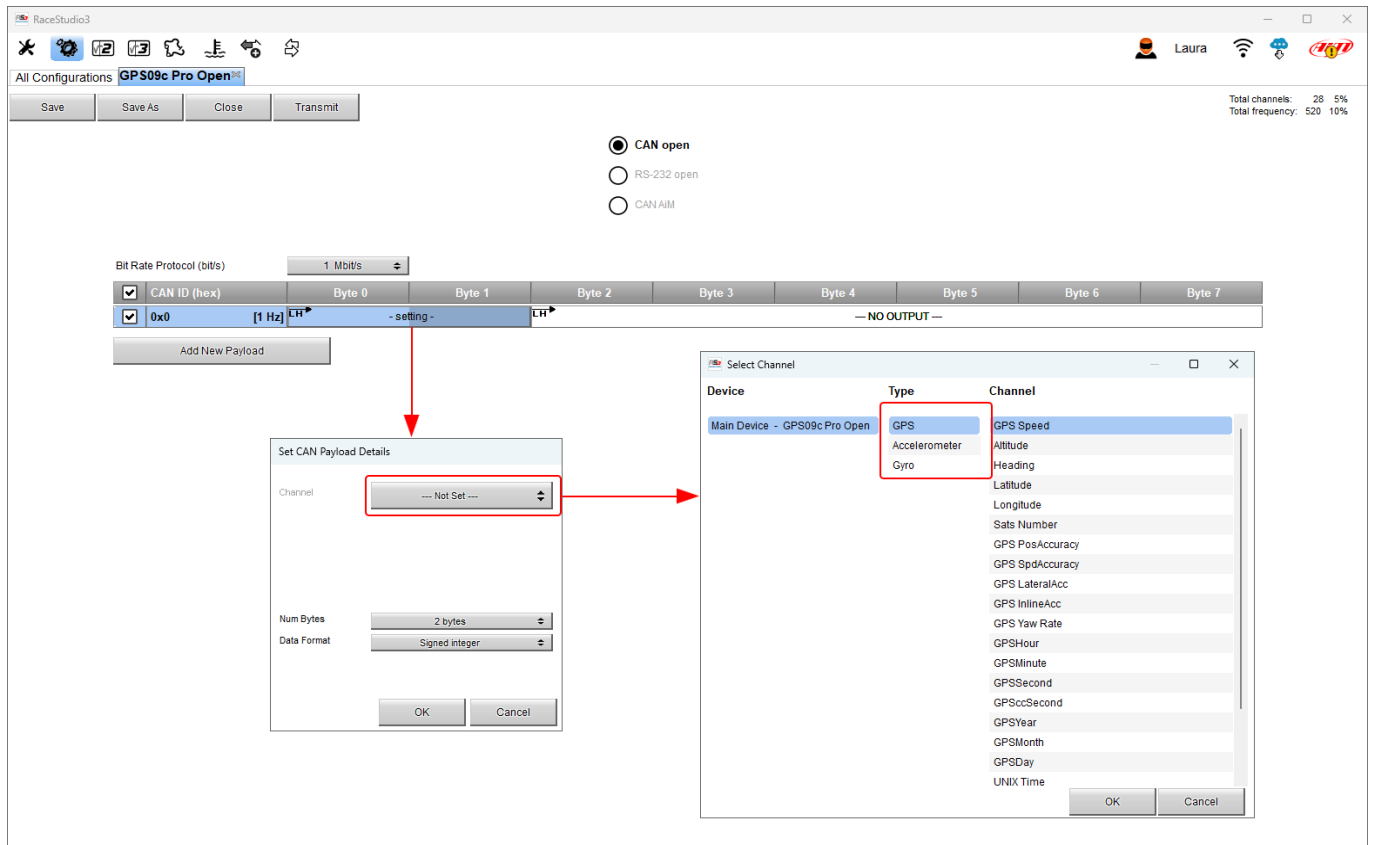
- ID (11 or 29 bits)
- DLC (1- 8 bytes)
- Byte order (little endian, big endian)
- Message frequency (1-5-10-25-50-100 Hz)
- Once the parameters set press "OK"
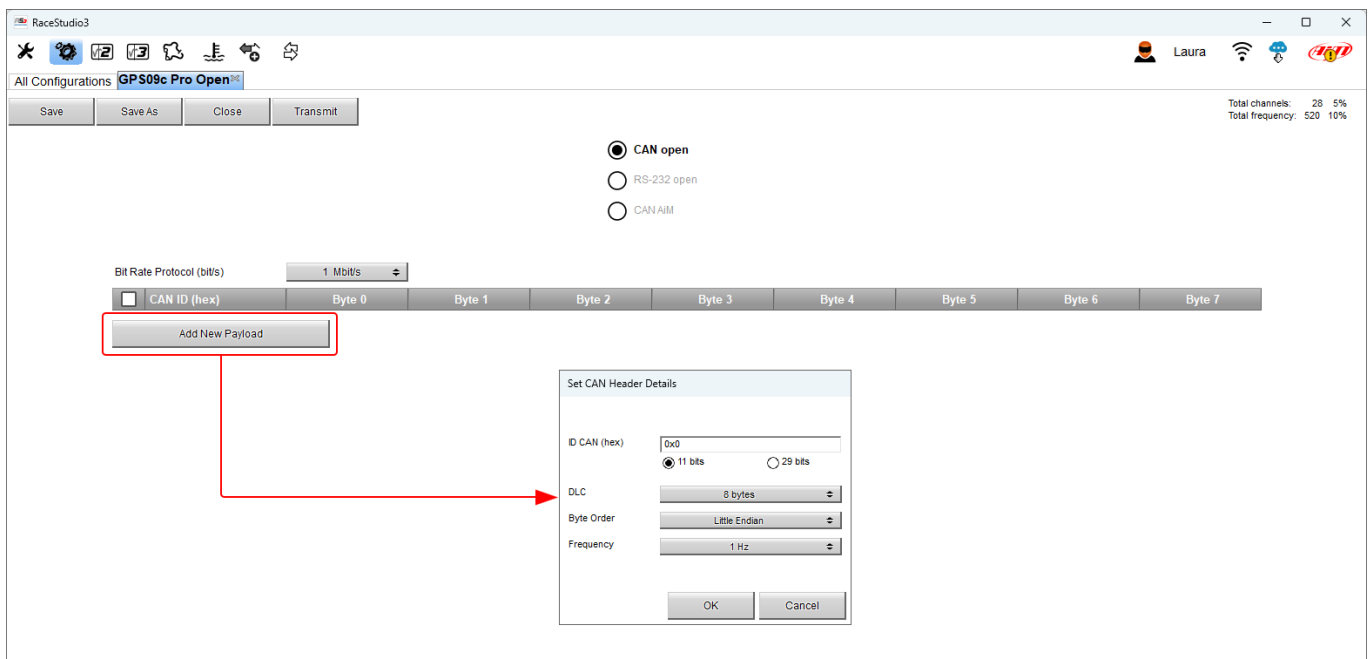
A new payload is added.
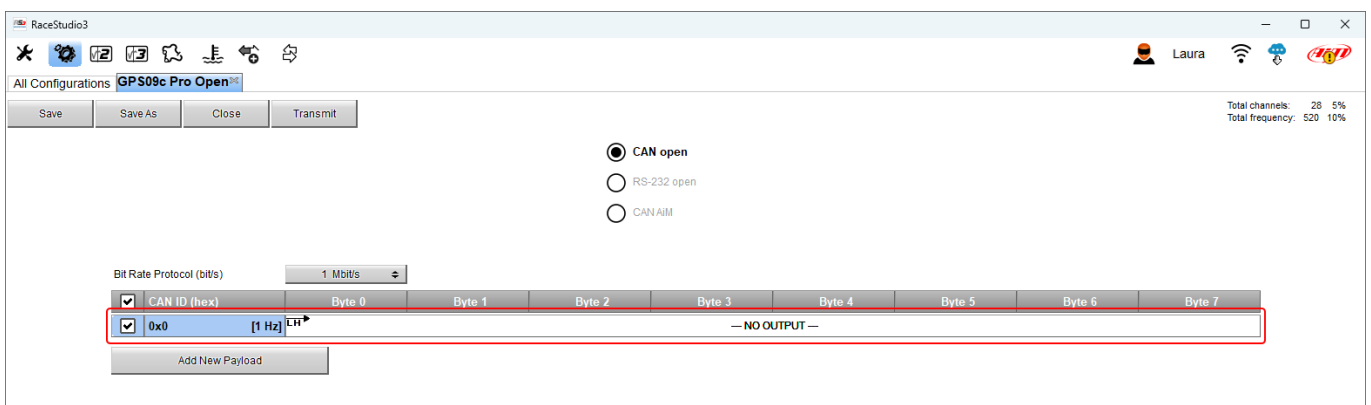
To set all payload bytes click on each box and the related setting panel is prompted. The first parameter to set is the channel.

GPS09c Pro Open may transmit three different types of information:

GPS
- GPS Speed
- Altitude
- Heading
- Latitude
- Longitude
- Sats number
- GPS Position Accuracy
- GPS Speed Accuracy
- GPS Lateral acceleration
- GPS Inline acceleration
- GPS Yaw rate
- GPS Hour
- GPS Minute
- GPS Second
- GPS cc Second
- GPS Year
- GPS Month
- GPS Day
- UNIX Time
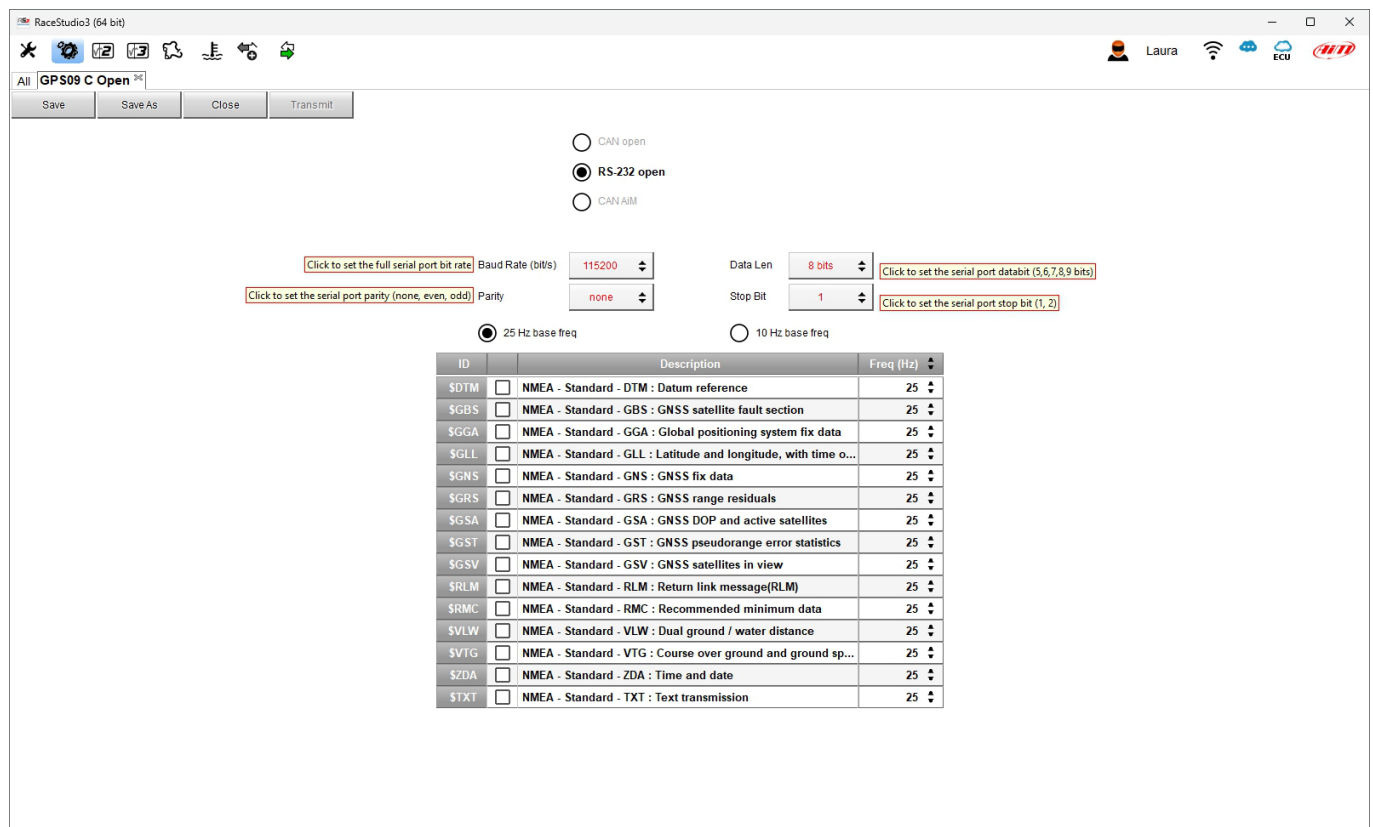- Week Number
- ITOW
- GPS UTC Time

Accelerometer
- Inline Acceleration
- Lateral Acceleration
- Vertical Acceleration

Gyro
- Roll Rate
- Pitch Rate
- Yaw Rate

3.2 – RS232 connection

If you set GPS09c Pro Open in order to transmit an RS232 stream, it will transmit the standard NMEA messages.

It is of course possible to set all the parameters related to the RS232 protocol and the frequency at which each message is transmitted.

The messages the system may transmit are: NMEA DTM

- NMEA DTM – Datum reference
- NMEA GBS – GNSS satellite fault section
- NMEA GGA – Global positioning system fix data
- NMEA GLL – Latitude and longitude with time of position fix and status
- NMEA GNS – GNSS fix data
- NMEA GRS – GNSS race residuals
- NMEA GSA – GNSS DOP and active satellites
- NMEA GST – GNSS pseudorange error statistics

- NMEA GSV – GSV GNSS satellites in view
- NMEA RLM – return link messages
- NMEA RMC – recommended minimum data
- NMEA VLW – dual ground/water distance
- NMEA VTG – course over ground and ground speed
- NMEA ZDA – Time and date
- NMEA TXT – Text transmission

The meaning of all these NMEA messages is described in www.nmea.org

3.3 – AiM CAN connection

In case you need to connect the device to an AiM CAN Network, you have to select "CAN AiM": the device is automatically managed by AiM dash or logger, so please refer to the user manual of the master AiM logger for any further information. According to the master logger it is possible to enable/disable and configure some parameters as well as to receive additional channels supplied by the IMU.
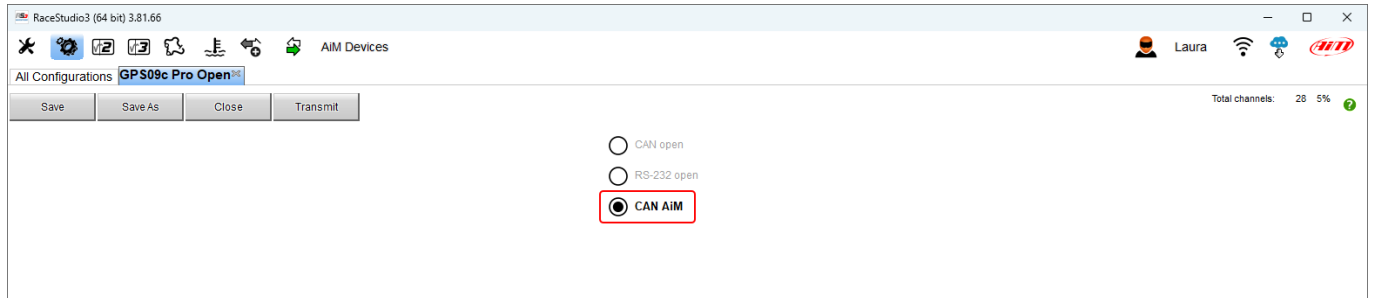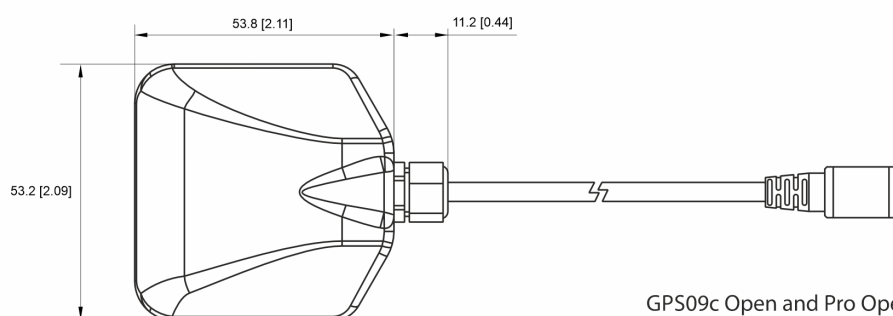
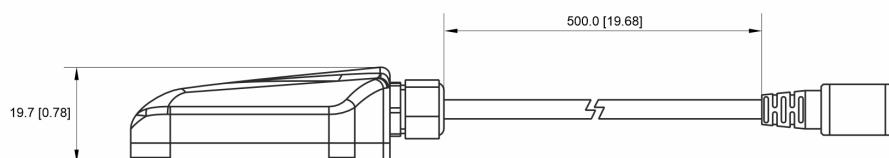# Technical characteristics and drawings

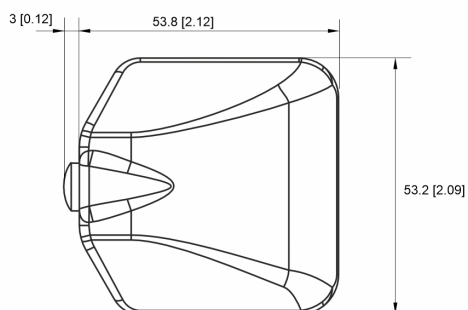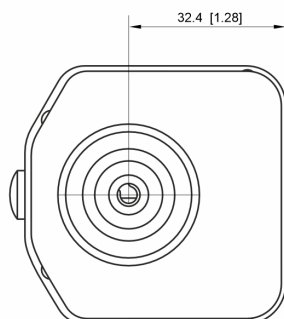GPS09c Pro Open Module technical characteristics are:

- GPS frequency   25Hz
- External Power   5-15V
- Inertial platform   10Hz internal 3 axis ±5G accelerometer + 3 axis gyro
- Connections   CAN, RS232
- Dimensions   53.2x53.8x19.7mm (Pro Open standard version)

                                                      53.2x53.8x37.2mm (Pro Open Roof version)
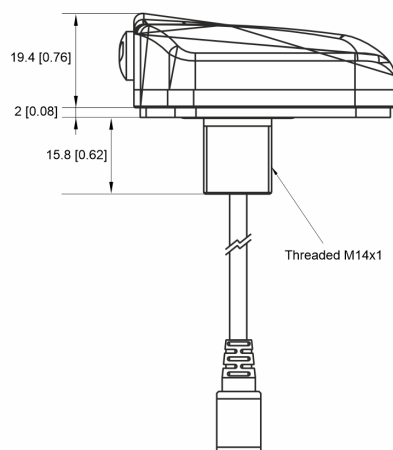- Weight   60.5g (Pro Open standard version)

                                                      100g (Pro Open Roof version)
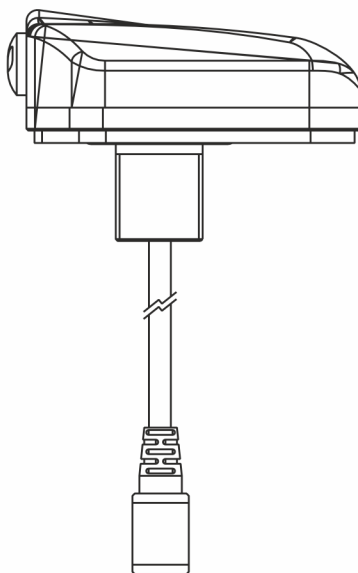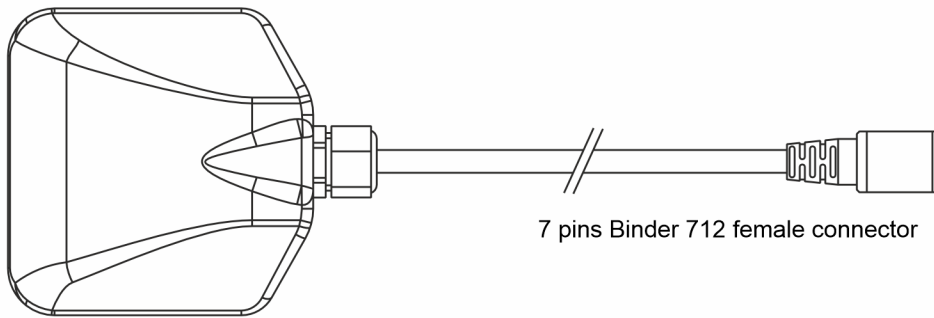- Waterproof   IP65

GPS09c Pro standard and roof version dimensions in mm [inches]

500.0 [19.68]

19.7 [0.78]

53.8 [2.11]   11.2 [0.44]

53.2 [2.09]

GPS09c Open and Pro Open

32.4 [1.28]

3 [0.12]   53.8 [2.12]

53.2 [2.09]

GPS09c Open and Pro Open,
Roof version

19.4 [0.76]

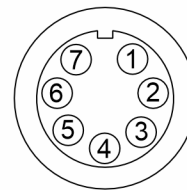2 [0.08]

15.8 [0.62]

Threaded M14x1

Pinout GPS09c Pro Open standard and roof version

7 pins Binder 712 female connector

7 pins Binder 712
female connector pinout
(external view)

1	USB D+
2	USB D-
3	CAN L
4	CAN H
5	GND
6	RS232 TX
7	+Vb

7 pins Binder 712 female connector