APLICOM A1

Installation guide rev. 3.1.0

Order code K503001

Important:

Please read this installation guide before the installation.

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CE

This crossed-out wheelie bin means that within the European Union the product must be taken to separate collection points at the product`s end-of life. This applies to your device but also to any enhancements marked with this symbol. Do not dispose of any part of these products as unsorted municipal waste.

A1 INSTALLATION GUIDE

Mechanical Installation

Select the place of installation from a safe, dry and mechanically protected area. Avoid installation to places of direct sunlight and extreme temperature.

There are two mounting lugs on the sides of the A1 device cover. Install the A1 device using both of the mounting lugs in one of these ways (see figures below).

1. With the Screws. Put the screws through the outer openings. Figure 1.
2. With the Cable tie. Put the cable tie through the inner openings. Figure 2.
3. With the Reclosable dual lock fastener. Attach another half of the fastener to the bottom of A1 device. Figure 3.
4. Installation on its broadside, consider the following instructions. Figure 4.
    - Use side-cutting pliers to remove mounting lugs.
    - Attach the device with the reclosable dual lock fastener. Attach the fastener to the logo side of the device. Device information must not be damaged or be hidden.

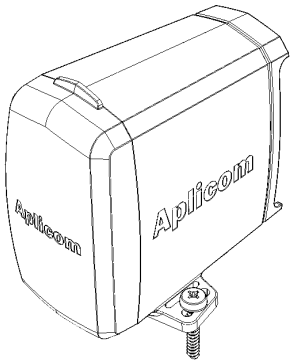

Figure 1.

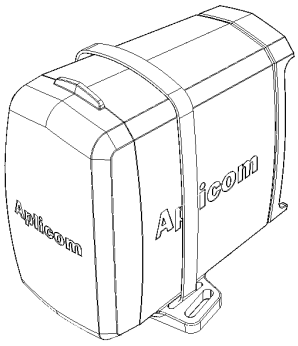

Figure 2.

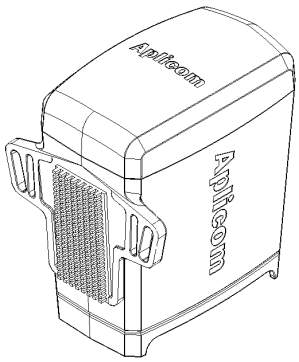

Figure 3.

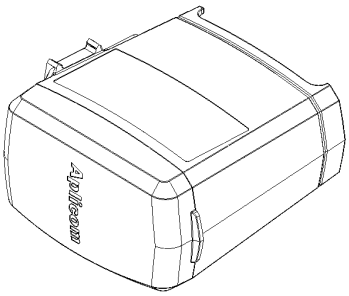

Figure 4.

Electrical Installation

- Read warnings chapter on page 5 on this document.
- Protect power supply lines (6,8...32Vdc) with 3A (max 10A) fuse at power supply end of line.
- Connect the cables to A1 device and peripherals as advised in the connection guide. Figure 11. IGN- line must be always connected.
- Install the GSM/GPRS antenna and cables as far away as possible (minimum 1 metres recommended) from the radio antenna or other electrical devices to avoid any interference.
  Additional information: Application note *K505002 Cabling of Aplicom Products*.
- Avoid ground loops! It is highly recommended to connect all A1 and peripherals ground connections to a single point. It is also recommended to use non-grounding antennas.
- Insert the SIM card to the SIM card slot. Figure 12.
- Insert optional Internal battery. Figure 12.
- Attach the elastic protective cover. Figure 1.
- A1 device versions with CAN bus functionality ** do not include internal bus terminator resistor (120Ω).
- The led beside the battery connector indicates the battery charging state. When lit:
  - Green, battery is fully charged
  - Yellow, charging is in progress
  - Red, indicates an error condition e.g. battery overheating
- Disconnecting ground lines shall not be done while unit is connected to power supply of the vehicle. This will cause voltage leak between IO connections causing possible problems in external devices connected to them.
- When digital tachograph is connected to A1 they must share a common ground potential. If the ground potential is not common, the serial connection between units may not work. Use the ground wire of the provided cable to secure the ground potential.

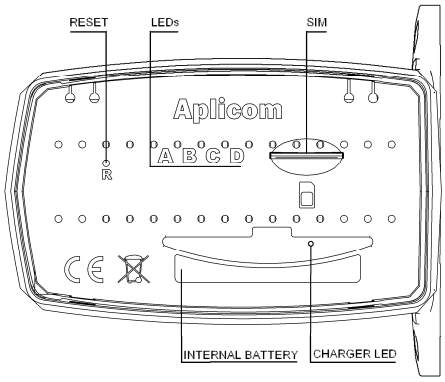

Figure 5.

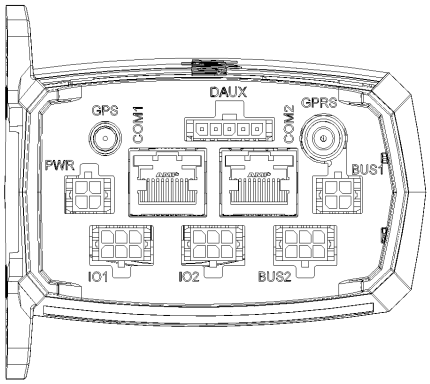

Figure 6.

PWR	**BUS 1**
Pin 1, Power in	Pin 1, NC
Pin 2, Ignition	Pin 2, LED_CTRL
Pin 3, +12V, Ext. Battery *	Pin 3, 1-WIRE
Pin 4, GND	Pin 4, GND

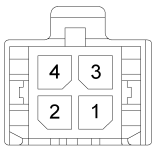

Figure 7.

IO 1	**IO 2**	**BUS 2**
Pin 1, PWROUT ***	Pin 1, PWROUT ***	Pin 1, K-LINE
Pin 2, OC1/DOUT1	Pin 2, OC2/DOUT2	Pin 2, CAN_H **
Pin 3, DIN5/PLS_CNT1	Pin 3, DIN6/PLS_CNT2	Pin 3, CAN_L**
Pin 4, DIN1/AD1	Pin 4, DIN3/AD3	Pin 4, RS485-A
Pin 5, DIN2/AD2	Pin 5, DIN4/AD4	Pin 5, RS485-B
Pin 6, GND	Pin 6, GND	Pin 6, GND

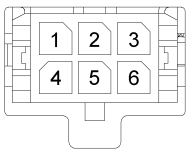

Figure 8.

COM 1	**COM 2**
Pin 1, GND	Pin 1, GND
Pin 2, RXD1	Pin 2, RXD2
Pin 3, TXD1	Pin 3, TXD2
Pin 4, DTR1	Pin 4, DEBUG_TX
Pin 5, DSR1	Pin 5, DEBUG_RX
Pin 6, CTS1	Pin 6, CTS2
Pin 7, RTS1	Pin 7, RTS2
Pin 8, RI	Pin 8, NC

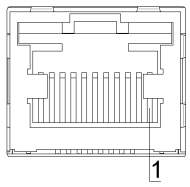

Figure 9.

DAUX (Connector for Aplicom digital HF set)
Pin 1, TX_DAI
Pin 2, CLK_DAI
Pin 3, FS_DAI
Pin 4, RX_DAI
Pin 5, GND

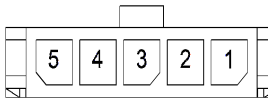

Figure 10.

** = Available only when external battery option included. Additional information: K503010 Installation guide for A1 external battery.*
*** = CAN bus is available in A1 FLEX and A1 MAX only.*
**** = Available only when internal battery option included. +5V, 100mA output*, active when A1 is on, same supply for IO 1 and 2 (total 100mA max.)*

NC = Not connected

Technical Data

Supply voltage	6,8…32Vdc (nominal +12Vdc) 8…32Vdc with internal battery option 12…32Vdc with external battery charging option	**Dimensions**	78mm (W) x 95mm (H) x 101mm (D)
Current consumption	Typical: < 100mA Max (peak): 1A / < 1s	**Weight**	Without internal battery option: 220g With internal battery option: 260g
GPS antenna power supply	3Vdc	**Housing / material**	IP31, IP54 option Plastic ABS+PC / PC / TPE+SEBS
Fuse	External fuse on power cable D335001: 3A (Max 10A) Internal fuse: 3A/slow	**User interface**	SIM card slot Indicators (LEDs): Led A - Power on Led B - JAVA appl. Led C - JAVA appl. Led D - JAVA appl. Reset switch Led internal battery charger
Operating temperature	-30°C...+60°C (see Note 1) -5°C...+60°C With internal battery -30°C...+50°C With external battery	**Options**	Battery option 1 (internal Li-Ion 800mAh), short-term full operation back up Battery option 2 (external lead acid 12V/7Ah), long-term full operation back up
Storage temperature	-40°C...+70°C	**Warranty**	1 year
Relative humidity	+95% max		
Power switch	None, IGN and SW controlled	**CE marking/Approvals**	according to directives: 2004/108/EC (previously 89/336/EEC), 2004/104/EC (previously 95/54/EC) 99/05/EC
Common connections	2 x RJ45 for COM1 and COM2 FME for GSM antenna SMA for GPS antenna 2 x Molex Microfit, 4 pin for PWR and BUS1 3 x Molex Microfit, 6 pin IO1, IO2 and BUS2, 1 x Molex Microfit 5 pin for DAUX	***Note 1:***	Ensure SIM cards operating temperature range from telecom service provider.

WARNINGS

- Warranty void if case is damaged.
- A1 device and all peripherals must be powerless during the installation. Turn off ignition and disconnect power.
- Do not use detergents to clean the device.
- GPRS may interfere sensitive electronics.
- All devices connected to A1 device must have a fuse protection.
- Power, ignition and signal wires connected to A1 must be fuse protected, max 10A.
- It is recommended to use installation materials provided Installation Kit for A1 for installation.
- As a rule, when pulling Aplicom cables through inlets or tubes during installation, it is not allowed to pull directly from connectors. Instead the pull must be directed to cable itself.
  For example, in cable D335083 there's heat shrink assembled just next to Microfit connector (A1 end on the cable), which can be utilized for pulling.
- Connector bodies of the antennas are conical. Avoid extreme torque.
- The place of installation should be safe from detergents and corrosive substances.
- Do not install unit in places were safety maybe compromised.
- PWR connector Pin 3, +12V, Ext. Battery is only for 12 volt lead acid battery do not use it with any other power sources.
- Ensure CAN connection and limitations from vehicle manufacturer or dealer.

INSTALLATION CHECKLIST

Action/Functionality	**OK**
DEVICE INSTALLATION	
The place of installation is safe from accidental knocks and excessive humidity.	
Unit identification label is protected.	
Device is fastened tightly.	
CABLES	
The cables are led carefully along a well-protected route to the device and the peripherals.	
All cables are correctly connected and secured with fuses.	
The cables are fastened or supported in such a way that during use they exert no torsion on the connectors.	
ANTENNAS	
GSM antenna is fitted in such a way that its visibility to base stations is as unobstructed as possible (vehicle roof; as far as possible away from other antennas, flashing lights etc.).	
GPS antenna is fitted in such a way that its satellite visibility is as unobstructed as possible (vehicle roof; as far as possible away from other antennas, flashing lights etc.).	
Antenna cables are led carefully along a well-protected route to the device.	
POWER ON DEVICE	
Connect PWR and turn IGN on.	
Check that power indication LED A is green.	

TROUBLE SHOOTING

Problem	**Solution**
No power.	Check that all cables and fuses are connected.
	PWR is connected and IGN is on.
	Power indication LED A is green after power is connected and IGN is on.
No GPRS connection.	Check that SIM card is inserted.
	Check PIN CODE requirements from application manual.
No GPS position.	Check that the GPS antenna has open sky view.
	Check interferences from other structures to GPS antenna. NOTE! Electronic heated windshield may disturb GPS antenna sky view.

If none of the above helps, please contact your equipment dealer for further assistance.

NOTE!
This connection guide contains only example connections, not exact application specific connections.

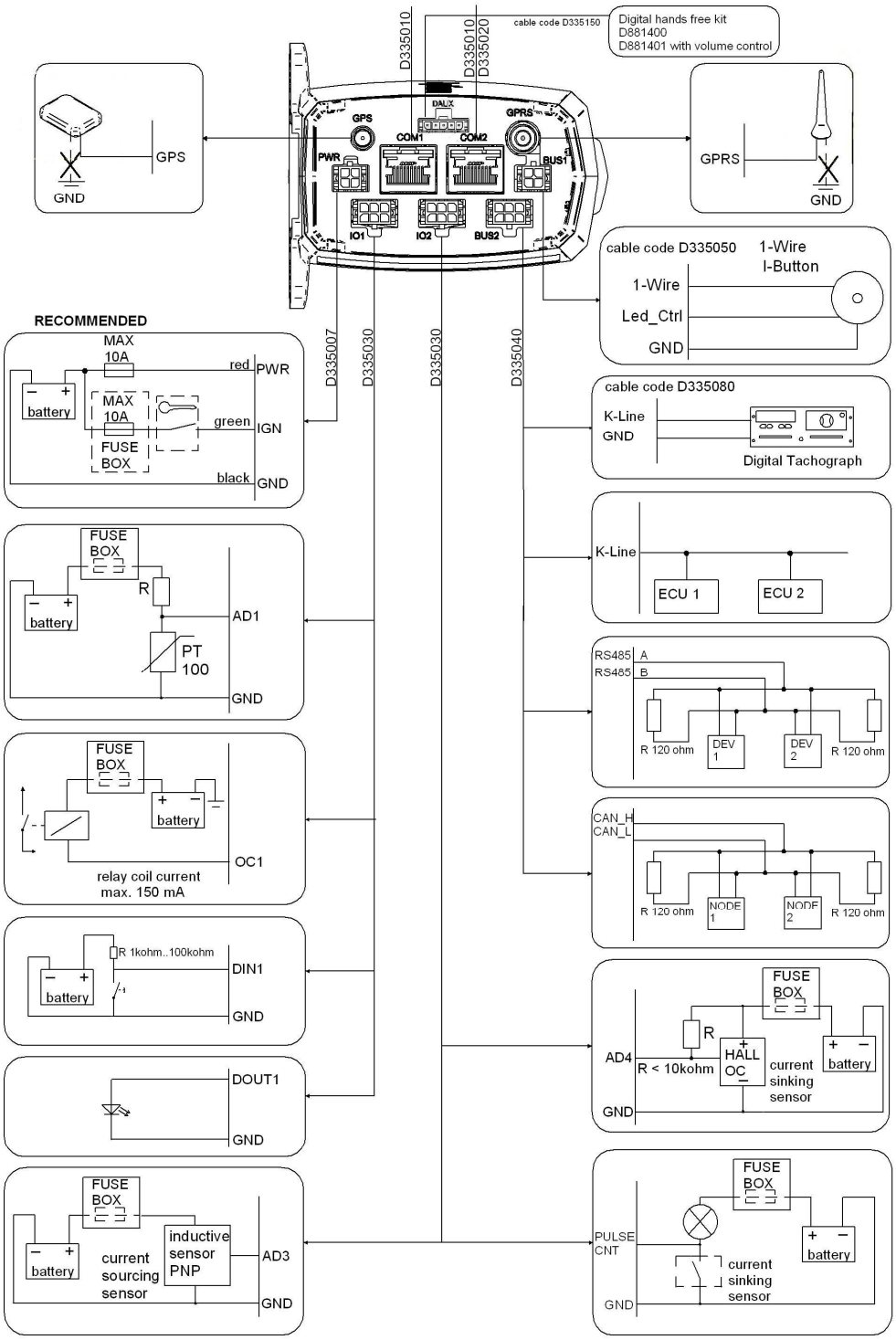

Figure 11. Connection guide

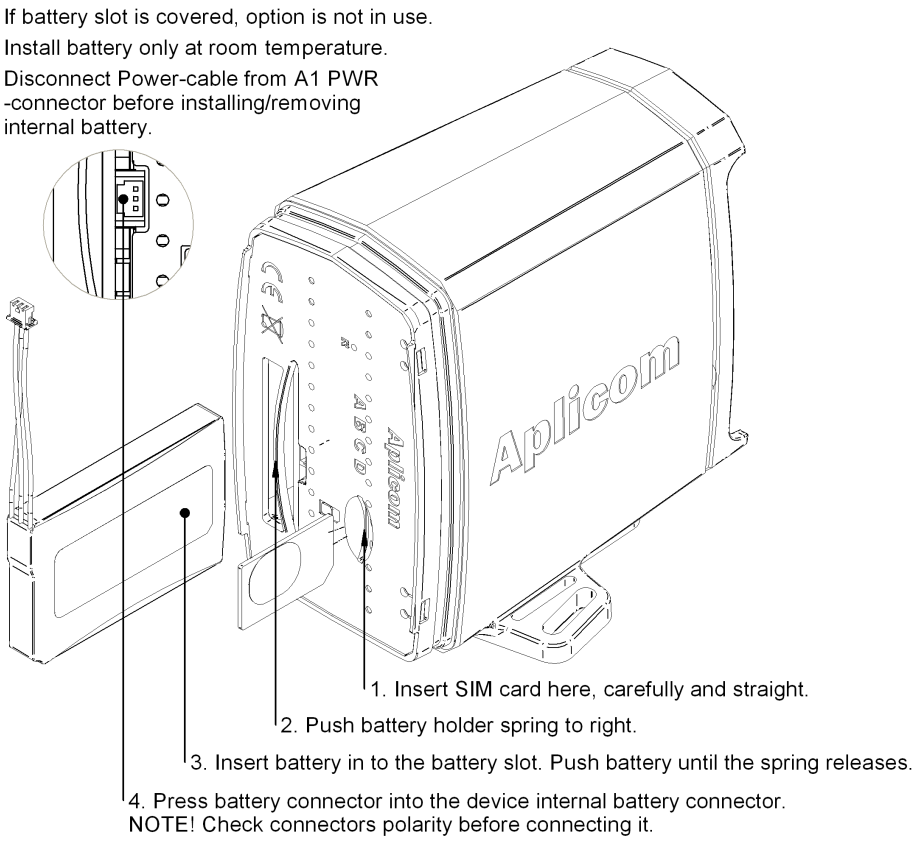

Figure 12. SIM card and Internal battery installation.

NOTE : Aplicom Oy recommends that the battery is changed after maximum three years use as a predictive service action.

Aplicom Oy is not responsible of any loss of data, income or any consequential damage and repair costs, which might be caused by improper use of batteries.

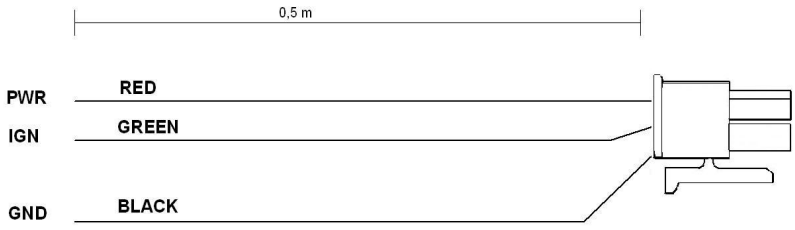

Figure 13. A1 Power cable D335001 (3m, with fuse) and D335007 (0,5m).

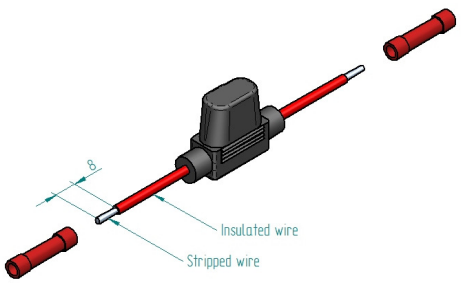

Figure 14. Crimping the fuse holder (D335001).