

APLICOM A9 PRO

Installation Guide rev. 1.0.0

This guide supports following devices
D108300 A9 PRO

Order code K521000

Important:

Please read this installation guide before the installation.



Package content



Figure 1.

Preparation and installing of the A9 PRO unit

The following steps must be made in right order to start the unit immediately for full operation.

1. Open the unit
2. Install SIM card
3. Close the unit
4. Connect external power cabling and other needed connections
5. Mechanically install the unit to carefully selected place
6. Connect the vehicle power supply to A9 wiring power supply with fuse protection

Insert the SIM card by opening the A9 PRO unit. Press locking lid on the other end of the device and at the same time lift up top case on locking side. Finally remove entire top case carefully and insert the SIM. Figures 2, 3 and 4.

Connect the Power and IO cable (D337300) and GPS antenna (D593563). Figure 5.

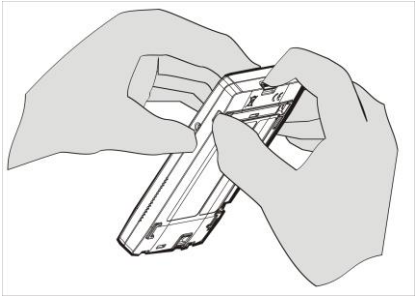


Figure 2.

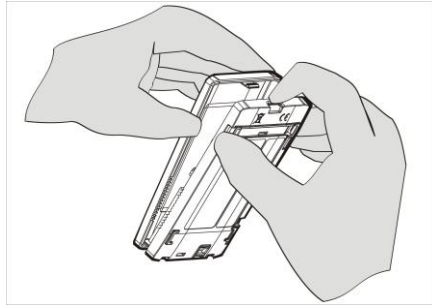


Figure 3.

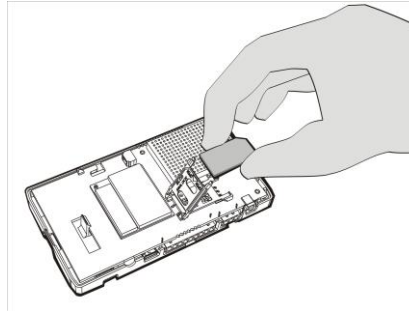


Figure 4.

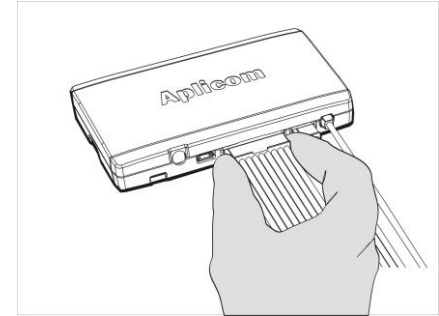


Figure 5.

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. Note that unit includes internal GPRS and shouldn't be installed in metal cage. Unit's product label is installed under top cover.

Note! Install the A9 PRO unit as far away as possible (minimum 1 metres recommended) from the car radio and its antenna or other electrical devices to avoid any interference.

Select the installation method from following options:

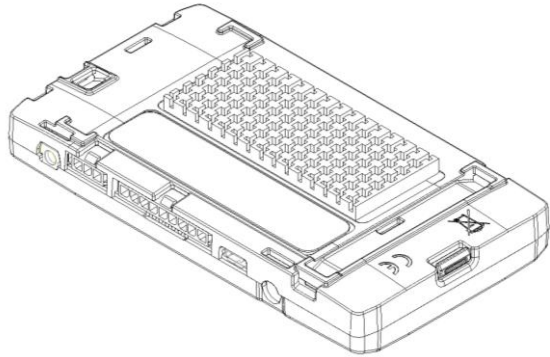


Figure 6. With the dual lock fastener. Attach another half of the fastener to the bottom of A9 PRO device and other half firmly to the surface on which the unit shall be fixed. Use the fastener which is delivered in the package.

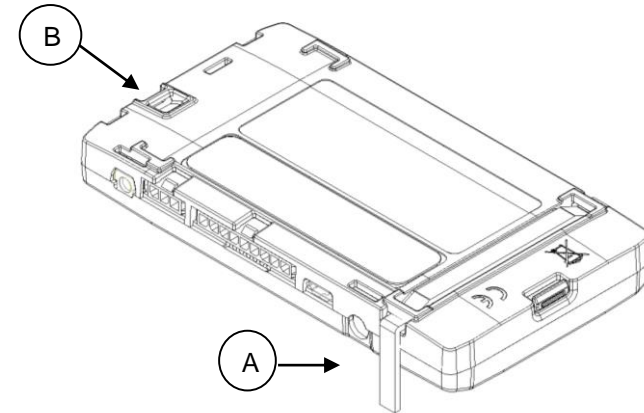


Figure 7. There are three mounting lugs on the sides of the A9 PRO device cover. Install the A9 PRO device using these mounting lugs with the cable tie A. Put the cable tie through the openings. There is also an optional cable tie opening B which can be used. Maximum width of the cable tie is 4,8mm.

Electrical Installation

- Read warnings chapter on page 10 on this document.
- Protect power supply lines (6,8...32Vdc) with 3A fuse at power supply end of line.
- Connect the cables to A9 PRO device and peripherals as advised in the connection guide. Figure 14.
- Install the A9 PRO unit as far away as possible (minimum 1 metres recommended) from the car radio and its 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 A9 PRO and peripherals ground connections to a single point. It is also recommended to use non-grounding antennas.
- Disconnecting ground lines shall not be done while the 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.
- Internal GSM/GPRS antenna: Install the A9 PRO unit to a place where unit's internal antenna have the best possible visibility to GSM/GPRS network base stations.
- External GPS antenna: Install the GPS/GLONASS antenna to a place where it has the best possible open sky view. Please note that Aplicom supplied antennas are installed inside the vehicle, on dashboard, on any surface, or windshield, depending on selected antenna type. The antennas direction to satellites must be correct to have a good visibility of satellites. Only antennas that are separately specified and clearly stated to be used outside of vehicle, can be installed so. Please refer to Aplicom documentation of the antenna.
- If the IGN -line is used ensure that it is connected to power line, in modern cars for example the lights etc. are pulse controlled.
- The GPS antenna connector contact retention is 1kg (min). Install the antenna with no disengagement force. If additional cable clamp is needed the optional cable tie opening can be used. Figure 9. Notice that the cable angle shouldn't be too tight. Figure 8.
- A9 PRO unit with CAN bus functionality * do not include internal bus terminator resistor (120Ω).

* CAN bus is available as option.

Notice that the cable angle shouldn't be too tight.



Figure 8.



Figure 9.

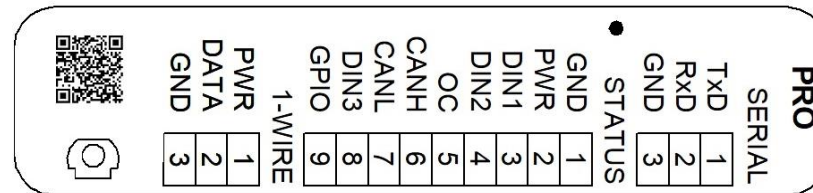
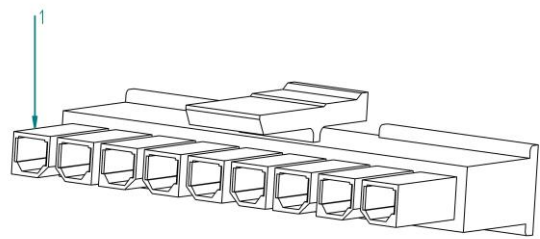
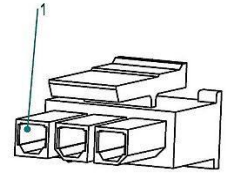
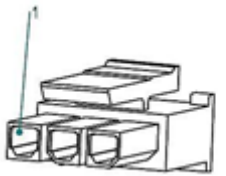


Figure 10. Connector sticker

<p>Power and IO cable for A9</p> <p>Pin 1, GND Pin 2, PWR Pin 3, DIN1/IGN/AD1/Pulse1 (default IGN) Pin 4, DIN2/AD2/Pulse2 Pin 5, OC Pin 6, CANH Pin 7, CANL Pin 8, DIN3/AD3/Pulse3 Pin 9, GPIO</p>	<p>Black Red Green Violet Blue Yellow Grey Orange White</p>	 <p>Figure 11.</p>
<p>1-wire cable</p> <p>Pin 1, 1-Wire PWR Pin 2, 1-Wire Data Pin 3, GND</p>		 <p>Figure 12.</p>
<p>SW CFG</p> <p>Pin 1, A9 TxD Pin 2, A9 RxD Pin 3, GND</p> <p>Used to SW configuration, COM1 port (sw option) and SW debug. Note! Use only Aplicom specific cable.</p>		 <p>Figure 13.</p>

Testing installation

If the unit has a default configuration

1. Connect the power on.
2. Status led is red when the software is started (this takes about 30s).
3. Status led is green when GPS fix is received (this takes about another 30s). Now the unit is working correctly.

If the unit has a service providers configuration follow their instruction, for example ensure that data is send to the server.

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

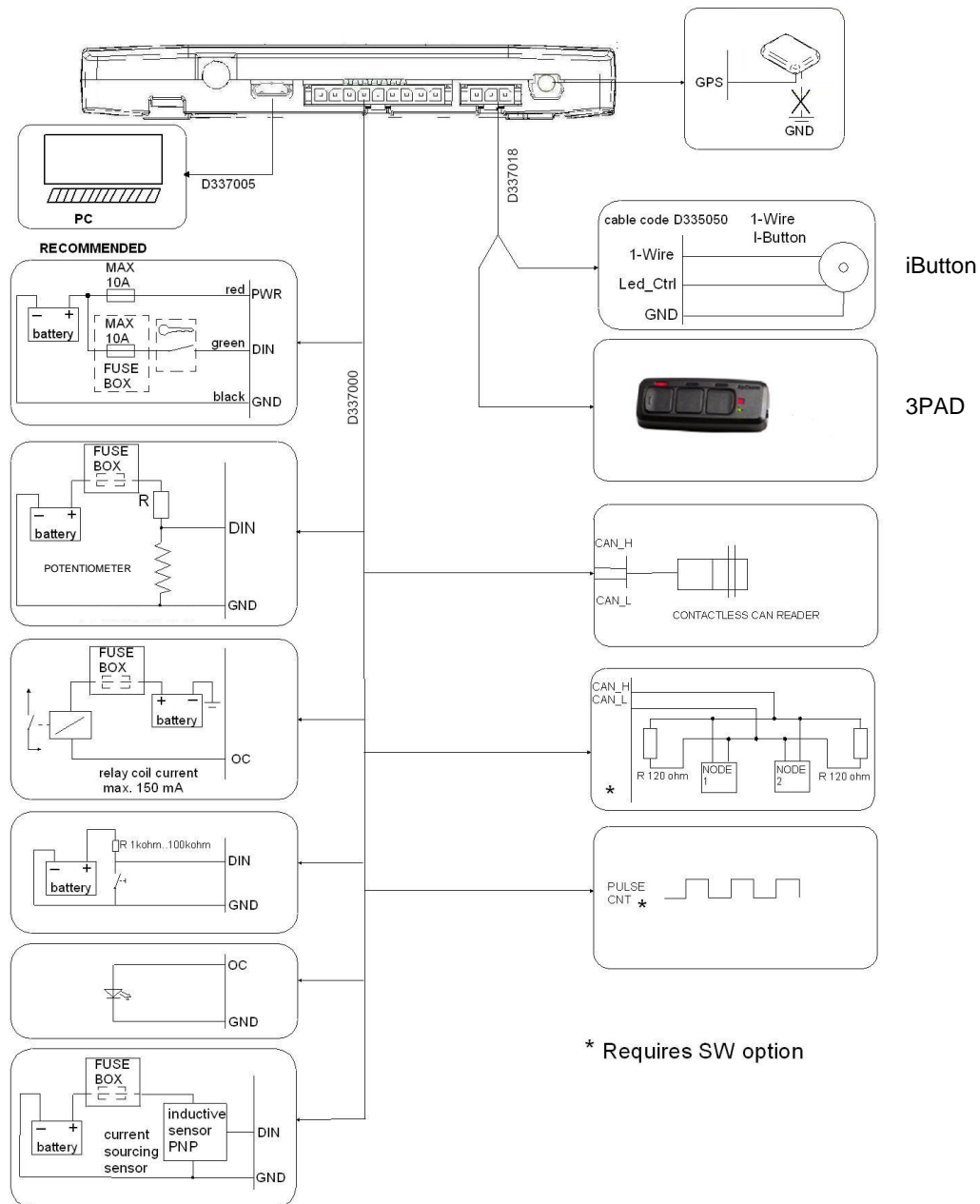


Figure 14. Connection guide

Note! If DIN1 is in IGN use then DIN2, DIN3 and GPIO are usable inputs.

Technical Data

Supply voltage	6,8...32Vdc (nominal +12Vdc)	Dimensions	61mm (W) x 112mm (L) x 13mm (H)
Current consumption	Typical: < 100mA Max (peak): 1A / < 1s	Weight	70g with internal battery
GPS antenna power supply	3Vdc	Housing / material	IP31, PC/ABS LG chem. GN5001TF
Fuse	External fuse on power cable: 3A Internal fuse: 3A/slow	User interface	SIM card slot (inside the unit) Indicators (LED): Led - JAVA appl.
Operating temperature	-30°C...+70°C (see Note 1) -5°C...+65°C With internal battery 0°C...+45°C internal battery charge	Options	CAN option
Storage temperature	-40°C...+80°C	Warranty	1 year
Power switch	None, IGN and SW controlled	CE marking/Approvals	according to directives: 2011/65/EU (RoHS) 2014/53/EU (RED) ECE r.10.05 E-type approval
Common connections	Internal GSM antenna MCX for GPS antenna 1 x Molex Microfit, 9 pin for PWR and IO 1 x Molex Microfit, 3 pin for 1-Wire interface	Relative humidity	+95% max

Note 1: Ensure SIM cards operating temperature range from telecom service provider.

WARNINGS

- Warranty is voided if case is damaged.
- A9 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. Install unit as far away from sensitive electronics as possible.
- All devices connected to A9 device must have a fuse protection.
- All signal inputs connected to A9 must be fuse protected, max 3A.

- 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.
- The place of installation should be safe from detergents and corrosive substances.
- Do not install unit in places where safety may be compromised.
- Ensure CAN connection and limitations from vehicle manufacturer or dealer.
- For replacing the internal battery see document *K520015 A9 battery replacement guide* available on Aplicom extranet. DO NOT USE OTHER BATTERIES THAN APLICOM DELIVERED. RISK OF EXPLOSION.
- DISCONNECT ALL CABLES FROM A9 connectors before changing internal battery.
- If the unit is to be transported by airplane, disconnect the Power /IO cable connector from A9 during the transport. Disconnecting the cable disconnects the A9 internal battery from the A9 internal electronics for safety.
- If A9 PRO A is used, install external communication antenna minimum 1 metres from the device itself.

Battery safety instruction

CAUTION: Failure to observe the safety instructions can result in fire, electric shock and other injuries or damage to the device or other property.

The housing is made of plastic with sensitive electronic components and batteries inside.

Safety instructions:

- Do not pierce, break, crush or cut the device or the battery!
- Do not expose the device or the battery to an open flame or extremely high temperatures!
- Do not expose the device or the battery to liquids or extremely low air pressure!
- Do not drop the device or the battery!
- Do not try to change the battery in the device!
- The device or the battery must be recycled or disposed of separately from household waste!

INSTALLATION CHECKLIST

	Action/Functionality
DEVICE INSTALLATION	The place of installation is safe from accidental knocks and excessive humidity.
	Device is fastened tightly and safely, with no possible interference with vehicle safety system like Airbag. etc.
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	A9 unit is fitted in such a way that its visibility to base stations is as unobstructed as possible.
	GPS antenna is fitted in such a way that its visibility GPS satellites is best possible and GSM/GPRS (internal) antenna has visibility to GSM/GPRS network.
	Unit is installed as far away as possible from vehicle radio and its antennas and wirings. Make sure that the GPRS sending of the unit does not cause disturbances to car radio or other vehicle systems. External GPS cables are led carefully along a well-protected route to the device.
	Check that vehicle windows do not have heating system that may block the GPS/GLONASS signals for example in dashboard or windshield installations. Check the antenna right orientation towards the GPS satellites and correct fixing place and surface.
POWER ON DEVICE	Connect PWR and if IGN is used, turn it on. If movement wake up is used, cause movement to start up the unit.
FINAL CHECK	Before completing the installation work, rigorous checking of any disturbances to vehicle or machine, where the unit is installed, must be made. Special attention is needed to check the vehicle safety systems and radio and multimedia equipment functions. This is to avoid recalls to service because of un-noticed problems.

TROUBLE SHOOTING

Problem	Solution
No power	Check that all the cables and fuses are connected.
	PWR is connected and IGN is on (if used).
No GPRS connection	Check that SIM card is inserted.
	Check PIN CODE requirements.
No GPS position	Check that the GPS antenna has open sky view.
	NOTE! Electronic heated or UV-protected windshield may disturb GPS antenna sky view.
	Ensure that GPS antenna is installed in right direction. This depends on used antenna type (dashboard/window mount).

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



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