Mobile Devices Ingénierie

C4MAX-3GNA

Installation Guide

Version 1.1
10/06/2015

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Preface

The information contained in this installation guide is subject to changes in order to improve the reliability, design or features without prior notice. Mobile Devices Ingénierie reserves the right to make changes in the content without obligation to notify any person or organisation of such changes or improvements. Mobile Devices Ingénierie can in no event be held liable for technical or editorial errors or omissions herein, nor for incidental, special or consequential damages from the furnishing, performance or use of this installation guide.

Please contact our technical support for current updates and supplemental information concerning the use and operation of this or other Mobile Devices Ingénierie products.

Warnings and notices

The exclamation point within an equilateral triangle is intended to alert the user to the presence of important operating and maintenance (servicing) instructions in the literature accompanying the product.

Please read the installation guidelines, as well as the safety and operating instructions before operating your device. Follow all instructions and heed all warnings in the installation guide.

There is a risk of explosion if the battery is replaced by a wrong battery type. Please discard empty battery according to local regulations.

1. Hardware features

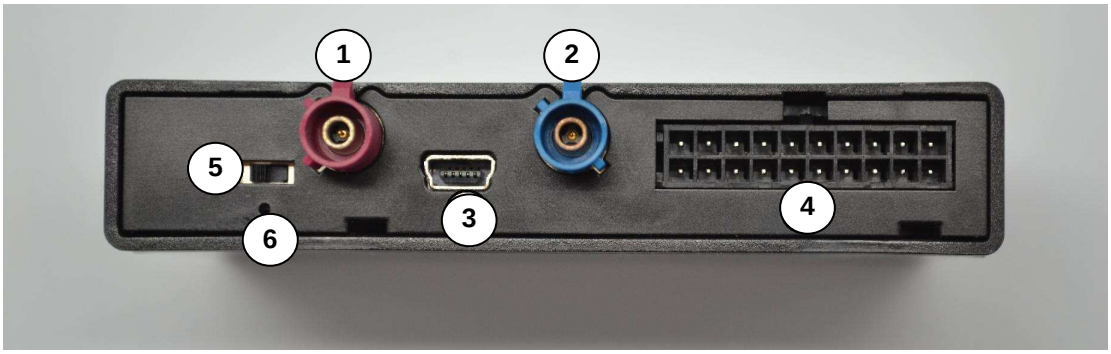
C4MAX-3GNA		
Performance	Processor	ARM 11 - 500MHz
	RAM	64 Mbytes
	NAND Flash	256 Mbytes
Power supply	External power supply 8-32V	
	External voltage measurement	8-32V
	Li-ion battery charger	
	Li-ion battery	900mA.h
Communication	Modem	3G US Data module (UE910-NAD)
	GSM antenna	External or Internal
Positioning	GPS receiver	Sirf Atlas V (A-GPS on option)
	GPS antenna	External or Internal
Inertial sensors	Internal 3-axis accelerometer	±2g, ±4g, ±8g
	Internal 3-axis gyroscope (on option)	±250°/s, ±500°/s, ±1000°/s, ±2000°/s
Interface & Telematics features	(Mini) USB 2.0	Host / Device / UART powered (5V out, 500mA max.)
	Digitals Input / Analog input	3 (Ignition, alarm and 1 input active low) / 2
	Digital Outputs	2 (relay-control & immobilizer on option)
	1-wire (for driver ID or temp sensor)	Yes
	LEDs	2 (1 controlled by software)
	RTC	Yes
	CAN 2.0B interface	If used, RS485 half duplex only, RS422 not possible
Product specific feature	RS232	2 (1 with RTS/CTS, 1 without)
	RS485 / RS422	Full/half duplex RS485 or RS422
	Bluetooth	Bluetooth 4.0 BLE dual-mode (with internal antenna)
	Wifi	IEEE Std 802.11n (with internal antenna)
	Other features	J1708 (optional) : if used, RS485 and RS422 are not available. 1708 is compatible with CAN option.
Environmental	Connectors	microFIT 20 pins
		Mini-USB
		2 Fakra connectors for the external antennas
	Operating temperature *	-30/+70°C
	Dimensions	96x54x17mm
	SIM card	Slot
	Dual GSM/GPS external antenna	3 meters cable With 27mm Fakra connectors

*without internal battery

2. Hardware description

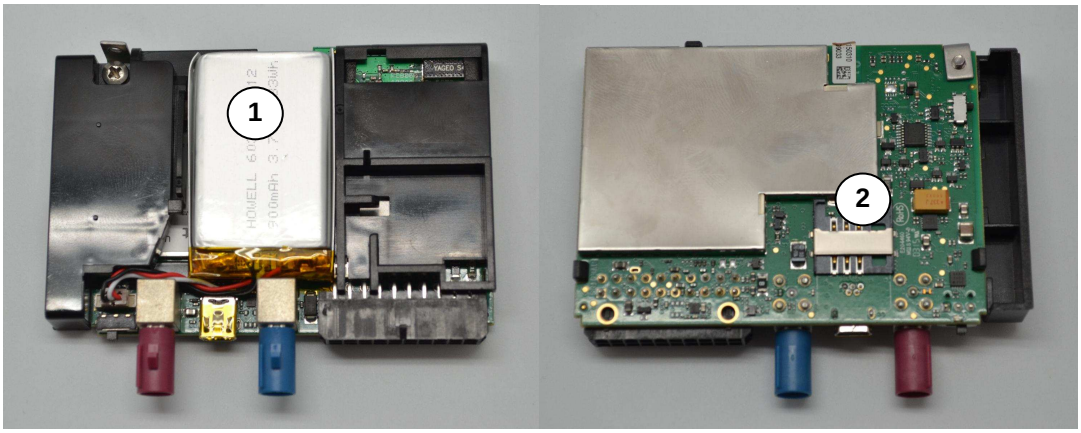
2.1. C4MAX-3GNA with external antenna

Front :



1. GSM connector
2. GPS connector
3. USB connector
4. Molex (20pins) connector
5. Inner battery switch
6. Leds

Inside :



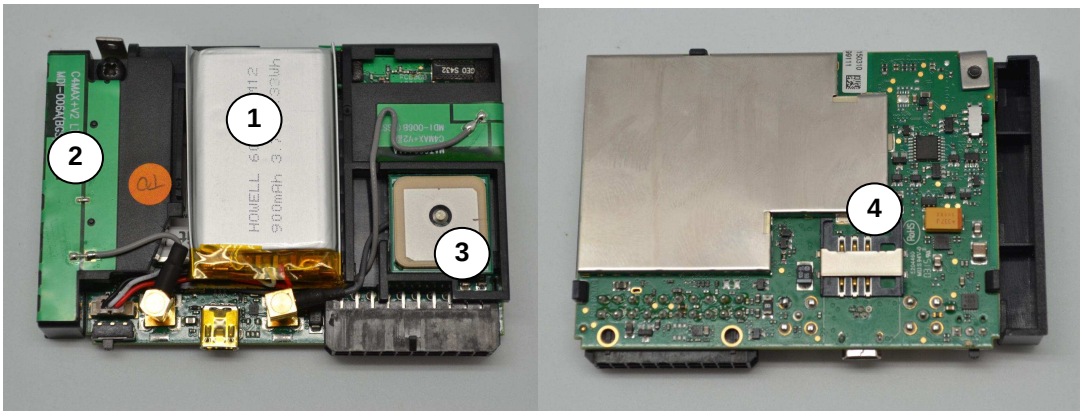
1. Internal battery
2. SIM card slot

2.2. C4MAX-3GNA with internal antenna

Front :

1. USB connector
2. Molex (20pins) connector
3. Inner battery switch
4. Leds

Inside :



1. Internal battery
2. Internal GSM antenna
3. Internal GPS antenna
4. SIM card slot

2.3. Recommendation for both type:

→ **Move the switch inwards (I) to activate the internal battery.**

The switching ON of the internal battery requires a running system. This is about 10 seconds after ignition (the led 4 must be lit then unlit).

→ **Move the switch outwards (O) to deactivate the internal battery**.

The switching OFF of the internal battery is instant. Thus, don't switch off the internal battery if the device is running without be connected to an external battery.

The SIM card PIN code must be deactivated.

3. Preparing/installing the device

3.1. Open the device to insert a sim card

Insert a flat screwdriver into the 2 holes and pry it to remove the back cover.

Unscrew the screw at the back of the device

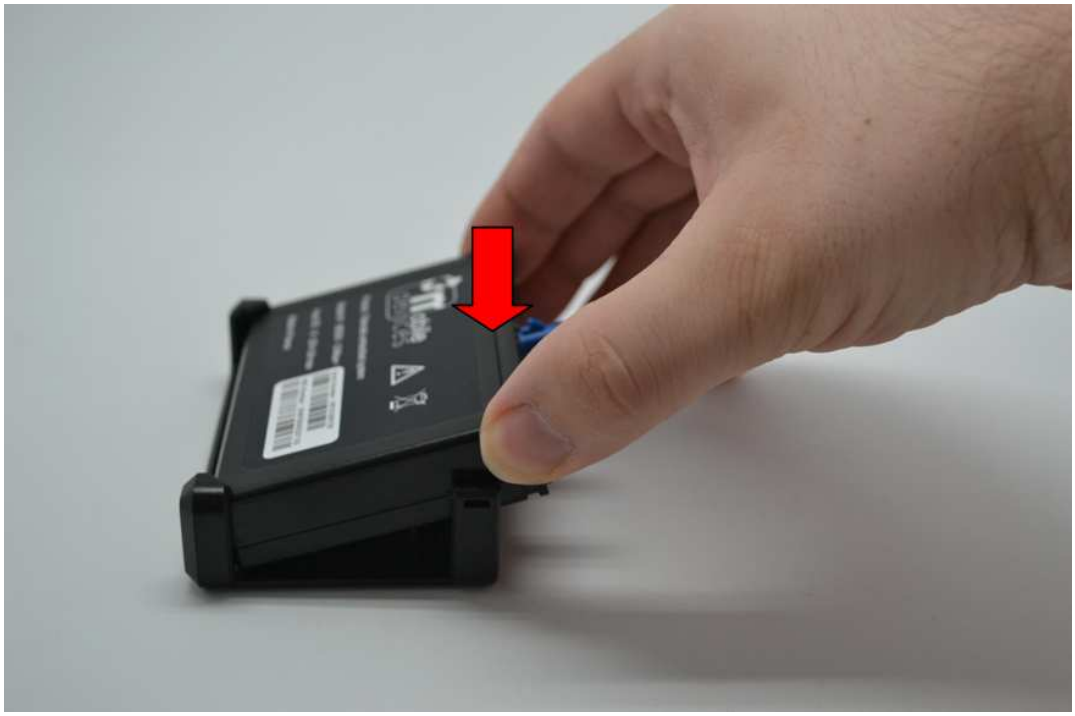
Afterwards pull on the PCB to release it.

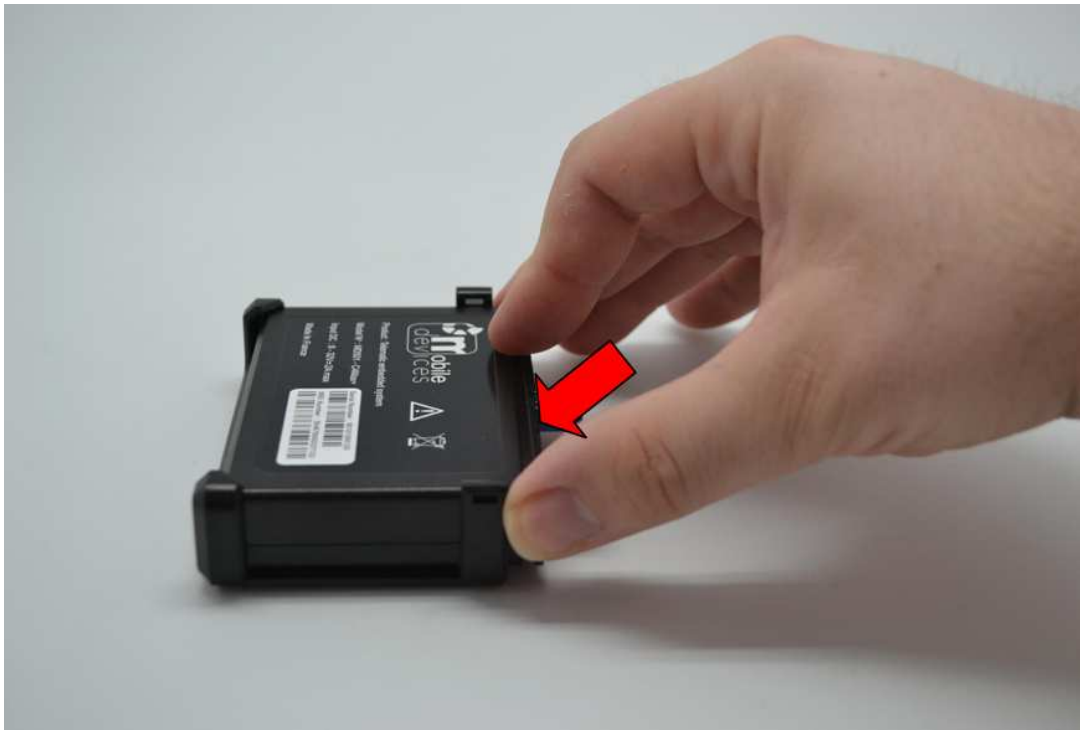
3.2. Connect the GSM/GPS external antenna

3.3. Choose the appropriate location for mounting

The ideal location for mounting the device is under the dashboard. However, some types of coated windshields, as well as windshields with an in-screen heating system can block GPS signals. External antenna should never be covered by any kind of object or material, especially not by metal or aluminium. Transmission and reception of GPS signal is however not hindered by plastic or normal glass. Moreover, put at least 20 cm between the antenna and a speaker.

3.4. Insert the device on external support





3.5. Pin out & Wires description

Signal	Pin	Colour
DIG_OUT1	1	Purple
DIG_OUT2	2	Blue
RS485_A	3	White with black
RS485_B	4	Red with black
DIG_IN1 / TACHO DATA	5	Green
RS232_CTS1	6	Blue with black
RS232_RXD2	7	Green with black
RS232_RTS1	8	Grey with black
ONE_WIRE	9	Grey
AN_IN1	10	Brown
VBAT	11	Red
GND	12	Black
CANL	13	Yellow with black
CANH	14	Purple with black
IGNITION	15	White
ALARM	16	Orange
RS232_RXD1	17	Orange with black
RS232_TXD1	18	Brown with black
RS232_TXD2	19	Black with white
AN_IN2	20	Yellow

20	19	18	17	16	15	14	13	12	11
10	9	8	7	6	5	4	3	2	1

Power supply may be derived directly from the vehicle's main power or from the board installation. In the first case, it is an absolute must that a fuse on the main cable is present.

Ignition wire must always be connected to the vehicle's ignition OR tied with the permanent positive to the vehicle's battery.

Ground must be always connected first. It is mandatory to add a fuse (2A) to the permanent positive. The closer to the connection point with vehicle power.

3.6. Plug the device to the external battery

The device must have a direct connection with the main power (external battery). Mobile Devices advise against the use of intermediate system.

1. Check that all the inputs implied in the wake-up reasons configured on your device are not connected.
2. Plug the device (black wire) to the ground of the external battery.
3. Plug the device (red wire) to the permanent positive of the external battery.
4. Plug the device (white wire) to the ignition (after contact).

In some case, the use of a circuit breaker can let the ignition (after contact) active. Thus, the device will be ON indefinitely. So, it's important to find a signal where the ignition can be ON or OFF.

Moreover, it is imperative to insulate the GPS antenna in order to avoid it get in touch with the car's chassis.

The device should be always plugged to :

- The ground of the external battery.
- A ground point defined by the vehicle manufacturer (if different from the ground of the external battery).

A circuit breaker should never be enabled as long as:

- Ignition is active.
- Ignition goes OFF since less than 2 minutes. This is the time for the device to do a proper shutdown.

It is mandatory to add a fuse (2A) to the permanent positive. The closer to the connection point with vehicle power.

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4. Inputs activation threshold

Here are inputs activation thresholds (voltage).

- **Ignition (active high)** is active if voltage greater than 3V (disabled if smaller than 1V)
- **Alarm (active low)** is active if voltage is below 1V (disabled if greater than 3V)
- **Digital Input1 (active low)** is active if voltage is below 0.5V (disabled if greater than 3V)

Note: Range voltage on inputs is 0-30V

5. Ouputs information

The two Outputs are active low and they can deliver up to 300mA.

Note: Outputs have a pull-up resistance of 10Kohms

6. LEDs sequences

Green LED (Soft)		Red LED (System)	
Sequence	Meaning	Sequence	Meaning
No GPRS/No GPS	3 times (50ms ON/100ms OFF) 3550ms OFF	C4MAX-3GNA OFF	OFF
No GPRS/Fix GPS	2 times (50ms ON/100ms OFF) 3700ms OFF	Ext. Power/Run	ON
GPRS OK/No GPS	1 time (50ms ON/100ms OFF) 3850ms OFF	Int. Bat/Run	ON
GPRS OK/Fix GPS	2000ms ON 2000ms OFF	Shutdown (hibernate)	5ms ON/2000ms OFF
		Idle/Sleep (idle)	twice (5ms ON/50ms OFF) 1895ms OFF

7. Support

For all questions not related in this installation guide, please contact the support team by email at support@mobile-devices.fr

8. FCC Regulations:

This mobile phone complies with part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.
This mobile phone has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiated radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

-Reorient or relocate the receiving antenna.
-Increase the separation between the equipment and receiver.
-Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
-Consult the dealer or an experienced radio/TV technician for help.
Caution: Changes or modifications not expressly approved by the party responsible for compliance could void the user`s authority to operate the equipment.

9. RF Exposure Information

This device meets the government's requirements for exposure to radio waves.
This device is designed and manufactured not to exceed the emission limits for exposure to radio frequency (RF) energy set by the Federal Communications Commission of the U.S. Government.

This device complies with FCC radiation exposure limits set forth for an uncontrolled environment. In order to avoid the possibility of exceeding the FCC radio frequency exposure limits, human proximity to the antenna shall not be less than 20cm (8 inches) during normal operation.

10. IC Notice

This device complies with Industry Canada license-exempt RSS standard(s). Operation is subject to the following two conditions:
(1) This device may not cause interference, and
(2) This device must accept any interference, including interference that may cause undesired operation of the device.

Le présent appareil est conforme aux CNR d'Industrie Canada applicables aux appareils radio exempts de licence. L'exploitation est autorisée aux deux conditions suivantes:
(1) L'appareil ne doit pas produire de brouillage, et
(2) L'utilisateur de l'appareil doit accepter tout brouillage radioélectrique subi, même si le brouillage est susceptible d'en

This Class B digital apparatus complies with Canadian ICES-003.
Cet appareil numérique de la classe B est conforme à la norme NMB-003 du Canada.

IC: 20253-C4MAX3GNA

11. IC Radiation Exposure Statement

Cet appareil est conforme aux limites d'exposition aux rayonnements de la IC CNR-102 définies pour un environnement non contrôlé. Afin d'éviter la possibilité de dépasser les limites d'exposition aux fréquences radio de l'IC CNR-102, la proximité humaine à l'antenne ne doit pas être inférieure à 20 cm (8 pouces) pendant le fonctionnement normal.