

H4 INSTALLATION GUIDE

28/05/2010



Table of contents

1.	Preface	3
2.	Warnings and notices.....	3
3.	Features	4
4.	Faces description	5
5.	The wires in a nutshell.....	6
6.	I/O specifications	9
7.	RS232 COM list and roles	9
8.	Installation (wiring).....	10
9.	How to retrieve CAN data?.....	13
10.	Compliant tachometers, connection and configuration.....	14
11.	Special requirement for 'ADR' tachometers	15
12.	Support	16

1. 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 reserves the right to make changes in the content without obligation to notify any person or organisation of such changes or improvements. Mobile Devices 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 products.

2. Warnings and notices

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.

3. Features

Software	
Standard software provided	Complete software library
Customization	Full set of API's (through SDK)
Features	
Communication interface	
• RS232 (RX/TX only)	4 (*)(**)
• USB	2 (**)(***)
• 1-Wire (iButton)	1
• CAN/FMS	1
• Tachometer	1
Inputs (*****)	
Digital inputs (5 to 24V)	6 (4 shared with analog inputs)
Analog inputs (0 to 5V)	4 (****)
Digital outputs : Open drain (5 to 24V, max 350mA)	2
Main Controller	ATMEL (ARM9) AT91SAM9260 (208 MHz)
RAM	32 MB
Flash Memory	32 MB
Real-time clock	1
Power vehicle	1 (8 to 30 V)
Operating temperature	0C° - 70C°
Dimensions (cm)	8 x 5 x 2

(*) : 2 with flow control.

(**) : 1 USB port or RS232 port will be used to connect to the main device.

(***) : 1 master and 1 slave.

(****) : Can also be used as digital inputs (10 bits converter).

(*****) : 6 digital inputs: 2 forced to GND detection, and 4 active high inputs (shared with analogical inputs).



Inputs 1 to 4 can be analogical or digital.

4. Faces description

Front view



1. Power connector
2. H/D info connector
3. I/O 1 connector (blue wrapper)
4. I/O 2 connector (red wrapper)

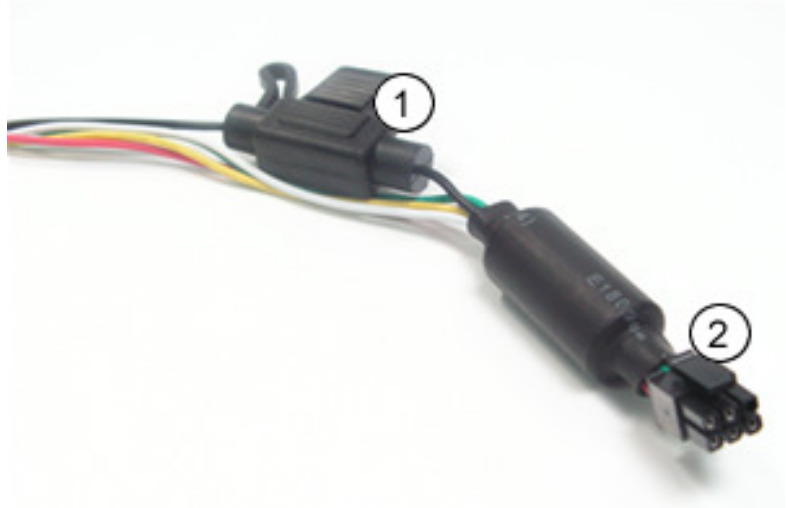
Rear view



5. Serial number

5. The wires in a nutshell

5.1. Power cable



1. Fuse
2. 6 pins connector

Signal	Wire color	Pin out
PERMANENT POSITIVE	Red	Pin 1
GROUND	Black	Pin 2
IGNITION	White	Pin 3
TACHO INFO	Green	Pin 4
TACHO 4PPM	Yellow	Pin 5

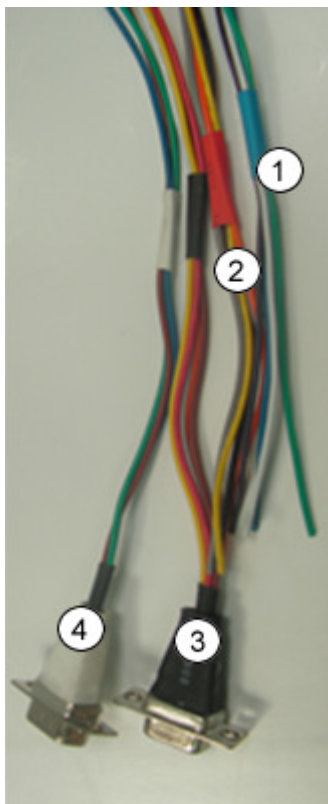
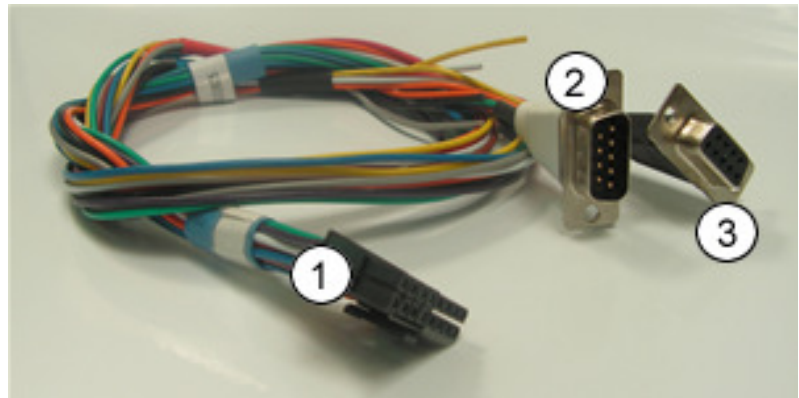
5.2. H/D info cable



1. RJ45 connector
2. USB Device connector
3. USB Host connector

5.3. I/O 1 cable (Blue ring)

1. I/O 1 connector
2. Male RS232 (white)
→ COM 2
3. Female RS232 (black)
→ COM o

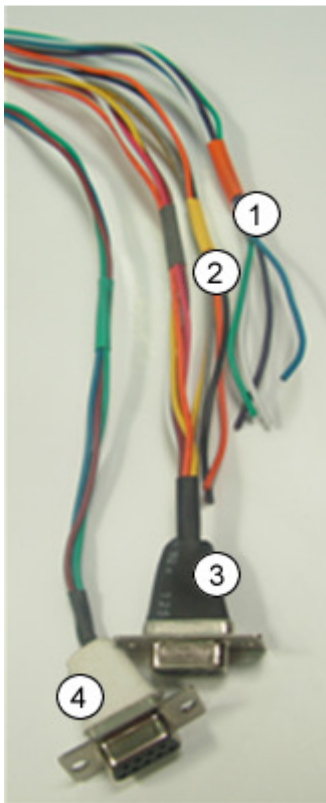
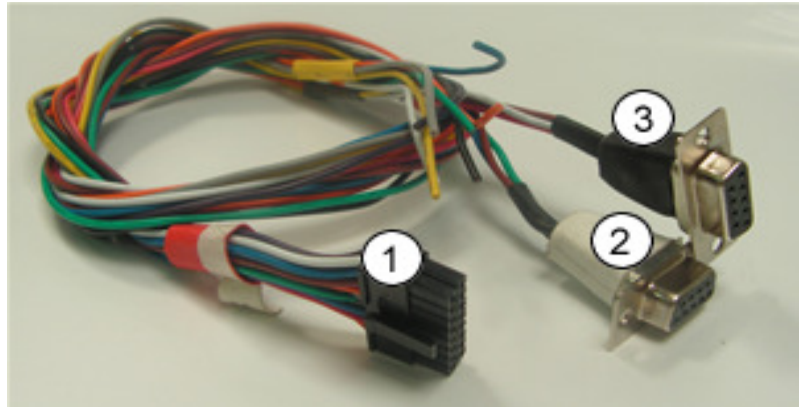


Wrapper	Wire	Signal
Blue (1)	Green	IN ₁ (VBAT)*
Blue (1)	Blue	IN ₂ (VBAT)*
Blue (1)	Violet	IN ₅ (GND)
Blue (1)	White	DIG_OUT ₁
Red (2)	Grey	OWIRE_SIG
Red (2)	Black	OWIRE_GND
Red (2)	Orange	CANH
Red (2)	Yellow	CANL
Black (3)	Yellow	RS232_TXD ₁
Black (3)	Orange	RS232_RXD ₁
Black (3)	White	RS232_RTS ₁
Black (3)	Red	RS232_CTS ₁
Black (3)	Maroon	GND_P ₁
White (4)	Blue	RS232_TXD ₃
White (4)	Green	RS232_RXD ₃
White (4)	Maroon	GND_P ₃

*Inputs 1 and 2 can be digital (default) or analogical.

5.4. I/O 2 cable (Red ring)

1. I/O 2 connector
2. Female Sub-D9 (white)
→ COM 3
3. Female Sub-D9 (black)
→ COM 1



Wrapper	Wire	Signal
Orange (1)	Green	IN ₃ (VBAT)*
Orange (1)	Blue	IN ₄ (VBAT)*
Orange (1)	Violet	IN ₆ (GND)
Orange (1)	White	DIG_OUT ₂
Yellow (2)	Grey	RS485_A
Yellow (2)	Black	RS485_B
Yellow (2)	Orange	RS485_Z
Yellow (2)	Yellow	RS485_Y
Grey (3)	Yellow	RS232_TXD ₂
Grey (3)	Orange	RS232_RXD ₂
Grey (3)	White	RS232_RTS ₂
Grey (3)	Red	RS232_CTS ₂
Grey (3)	Maroon	GND_P ₂
Green (4)	Maroon	GND_P ₄
Green (4)	Blue	RS232_RXD ₄
Green (4)	Green	RS232_TXD ₄

*Inputs 3 and 4 can be digital (default) or analogical.

6. I/O specifications

Range voltage	0 to 30V (Max. 30V)
Analogical inputs	0 to 5V
Digital inputs	5 to 24V
Digital outputs	5 to 24V
Input1* (+Vbat)	0 to 5V for analogical mode, 5 to 24V for digital mode
Input2* (+Vbat)	0 to 5V for analogical mode, 5 to 24V for digital mode
Input3 (+Vbat)	5 to 24V
Input4 (+Vbat)	5 to 24V

*Inputs 1 and 2 can be digital (default) or analogical. The switch between these modes is automatic.

7. RS232 COM list and roles

H4 I/O 1 (blue harness)

COM0 (Black RS232*) → Free

COM2 (White RS232*) → C4C/H4 communication gateway

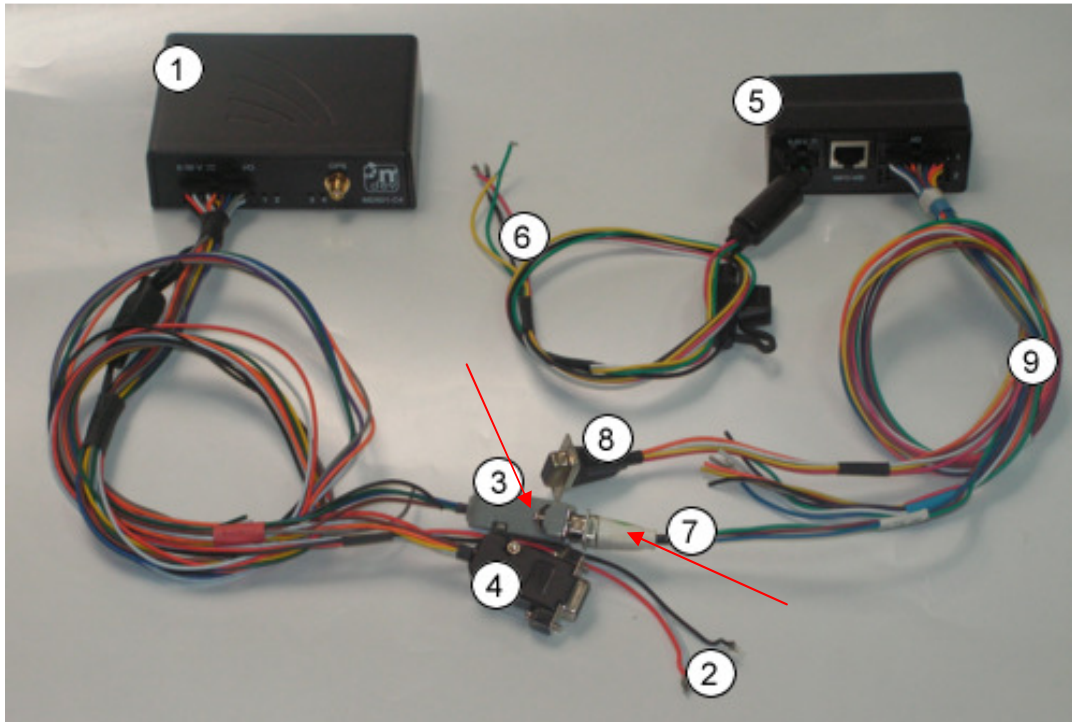
H4 I/O 2 (red harness)

COM1 (Black RS232*) → Free or H4 console

COM3 (White RS232*) → Free or SmartCardDriver if enabled (smartCardManager.active=1)

8. Installation (wiring)

8.1. H4-C4C (Serial)



1. C₄C;
2. C₄C ground (black), permanent power (red) and ignition (white) wires;
3. C₄C COM₁ (white RS232);
4. C₄C COM₀ (black RS232);
5. H₄;
6. H₄ ground (black), permanent power (red) and ignition (white) wires;
7. H₄ COM₂ (I/O₁ blue harness / white RS232);
8. H₄ COM₀ (I/O₁ blue harness / black RS232);
9. H₄ I/O₁ harness (blue ring).

To allow inter-board communication, C₄C COM₂ must be connected to the H₄ COM₂.



Once devices are connected, inter-board communication must be activated on both devices through the light console : **`serialPPP.enableMultiBoard=1`**

8.2. H4-C4D (Serial)

To allow inter-board communication, C₄D COM₁ must be connected to the H₄ COM₂. So In the previous scheme, that means connect 4 to 7.

8.3. H4-Dreevo-M (USB)



1. Dreevo-M;
2. Dreevo-M USB connector;
3. H4;
4. H4 H/D info cable.



Once devices are connected, inter-board communication must be activated on both devices through the light console : **`usbMount.enableMultiBoard=1`**

Note: A specific software deployment must be installed on devices to enable inter-board communication through the USB.

8.4. H4-Dreevo2 (Serial)



1. Dreevo2
2. Dreevo2 cradle with Molex connector;
3. Dreevo2 cable with a male RS232 + digital outputs;
4. H4;
5. H4 **COM2** (I/O1 blue harness / white RS232);
6. H4 power cable.



Once devices are connected, inter-board communication must be activated on both devices through the light console : **serialPPP.enableMultiBoard=1**

9. How to retrieve CAN data?

The H4 must be connected to the FMS gateway (*) to retrieve CAN data. Please note that even if some truck vendors provide a specific FMS gateway, the H4 is able to retrieve CAN data through the standard 'CAN high' and 'CAN low' signals.

We provide a sample module (fmsReader) which is able to retrieve the following data:

- FMS total fuel used
- FMS Fuel level
- FMS axle location
- FMS truck axle weight
- FMS total engine hours
- FMS vehicle identification
- FMS software identification
- FMS High resolution total vehicle distance
- FMS next regular maintenance
- FMS engine coolant temperature
- FMS standard information



The fmsReader sample module is not provided by default. Otherwise, this is possible to develop a custom module with our SDK.

(*) Standard CAN bus subset

10. Compliant tachometers, connection and configuration

Green and yellow wires of the power cable (see 3.1) are used to connect the H4 to a tachometer.

- Green → TACHO INFO
- Yellow → TACHO 4PPM

Tachometers	H4 Wires	Tachometer back connectors
1318_E (optical)	Yellow	Tachometer optical output is connected to the H4 though the optical/electrical converter.
	Green	
1324	Yellow	Not used
	Green	D8
1324_VOLVO (*)	Yellow	B7
	Green	D7
1381	Yellow	Not used
	Green	D8 (Sometimes B8 is used instead of D8)
2400	Yellow	Not used
	Green	D8
8400	Yellow	Not used
	Green	D7
EGK100	Yellow	B7
	Green	C1 (3963288 and 3963289) or C8 (3985693 to 3985700)
L2000	Yellow	Not used
	Green	D8
SE5000	Yellow	Not used
	Green	D8

(*) Here is the list of supported 1324_VOLVO tachometers:

- | | |
|-----------------------|-----------------------|
| → FT1324-513115180303 | → FT1324-713115230303 |
| → FT1324-513115210303 | → FT1324-523115170303 |
| → FT1324-713115220303 | → FT1324-723115200303 |

Once H4 and tachometer are connected it is required to apply a specific configuration with the correct tachometer type.

```

chronoTachyGraph.active=1
chronoTachyGraph.chronoTachyGraphType=1-9

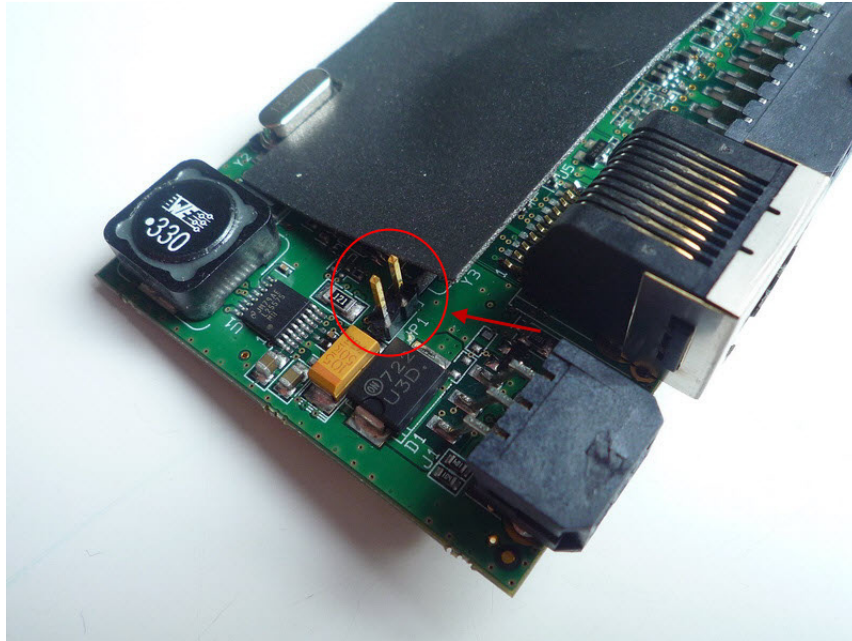
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- | | |
|-----------------------|-------------------|
| 1 → CHRONO_1318 | 6 → CHRONO_8400 |
| 2 → CHRONO_1324 | 7 → CHRONO_EGK100 |
| 3 → CHRONO_1324_VOLVO | 8 → CHRONO_L2000 |
| 4 → CHRONO_1381 | 9 → CHRONO_SE5000 |
| 5 → CHRONO_2400 | |

11. Special requirement for 'ADR' tachometers

If you want connect a H4 to an ADR tachometer you have to add a jumper on the JP1 connector.

1. Remove the front cover and release the PCB;
2. Look for the JP1 connector;



3. Add a jumper;
4. Replace the PCB and the front cover.

12. Support

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