CAN Bus and GNSS Combo Card

GADN Series USER MANUAL

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Important User Information

Liability

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There are many applications of the described product. Those responsible for the use of this device must ensure that all the necessary steps have been taken to verify that the applications meet all performance and safety requirements including any applicable laws, regulations, codes, and standards.

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The examples and illustrations in this document are included solely for illustrative purposes.

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Antzer Tech In-Vehicle Module User Manual

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1. Product Description

1.1. Introduction

Antzer Tech CAN bus solution is designed in Mini PCI-E for both full and half form factor. FARO-HP/FP Series CAN bus module can optionally support different protocols (CAN 2.0 A/B, OBD II, J1939 & J1708 protocols) for Vehicle diagnostic interface and offers an ideal CAN bus solution for the In-vehicle computing system.

Antzer Tech GADN Series, utilizes the self-defined extension interface, adding the GNSS feature onto the FARO-FP Series CAN bus module to provide the high-performance GNSS positioning feature within single Mini PCI-E slot.

1.2. Document History

Version	Date	Author	Description
1.0	3-Jan-17	James Chen	First version of this document
1.1	11-Jan-18	Irene Cheng	1. Add Support Linux Socket CAN 2. Pin definition Change (CAN1 → Port0; CAN2→ Port1) 3. Cable P/N Change CA001 → T1700000008 CA003 → T1700000009 CA005 → T1700000010
1.2	02-Jul-18	Haney Huang	1. Removed 3 series product information 2. Updated S/W driver and SDK support list 3. Modified Cables P/N 4. Modified the title on cover page.
2.0	24-Apr-24	Haney Huang	Modified the document due to the new series GADN-FG released. Modified the title on cover page.

1.3. Hardware Specification

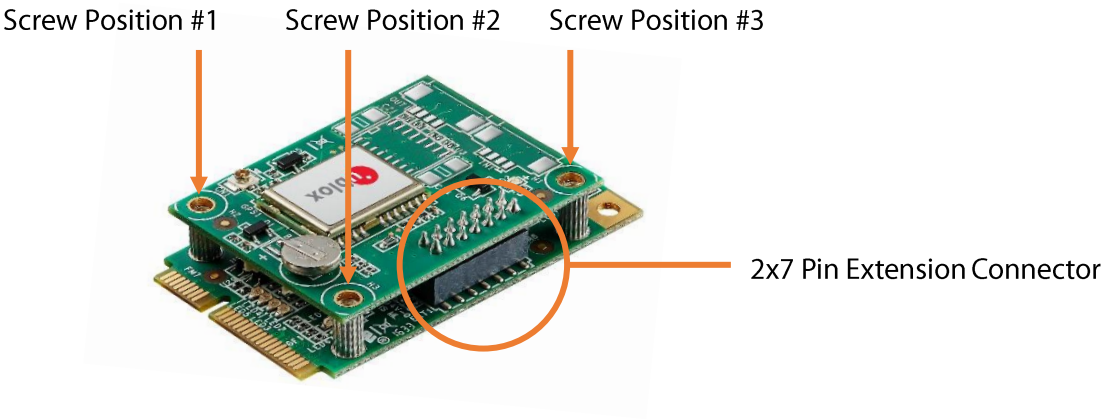
Specifications		
Interface	Form Factor	Full PCI Express Mini Card with Extension Board
	Host Interface	USB 2.0 via PCI Express Mini Card Socket
CAN/Sensor	Interface Number	CAN (ISO 11898) x 2 Individual Channels J1708 x 1
	Sensor	3D Gyroscope 3D Accelerometer
	CAN	CANbus 2.0 a/b, OBD-II (ISO 15765-4), J1939, and J1708
	Identifier Filtering	Mask and Identifier List Mode
GNSS Module	GNSS Module	u-blox NEO-M8N/M8U/M8L
	Host Interface	USB2.0 (virtual COM port) via Mini PCIe to Host (UART on GNSS module
	Receive Type	72-channel u-blox M8 engine Concurrent reception of up to 3 GNSS (GPS, GLONASS, BeiDou)
	Dead Reckoning	GADN-FxxUx for UDR GADN-FxxLx for ADR/CAN-to-ADR
	Quick Hot Start	Support, Li-Coin Battery is Required
	GNSS Antenna	External, IPEX connector onboard (Default Support Active Antenna) * Optional SKU Support Passive Antenna
Software	Driver Support	Microsoft Windows 7 / 8 / 8.1 / 10 Linux Ubuntu 14.04 and Later SocketCAN (Source Code)
	SDK Support	Microsoft Windows 7 / 8 / 8.1 / 10 Linux Ubuntu 14.04 and Late
Environment	Operating Temp.	-40°C ~ 85°C (without Li-Coin Battery) -20°C ~ 60°C (with Li-Coin Battery)
	ESD Protection	8kV Contact, 15kV Air
	Certification	CE, FCC Class B
Dimension	L x W x H	50.9 x 30 x 13.2mm

2. Connector Overview

2.1. GADN Series

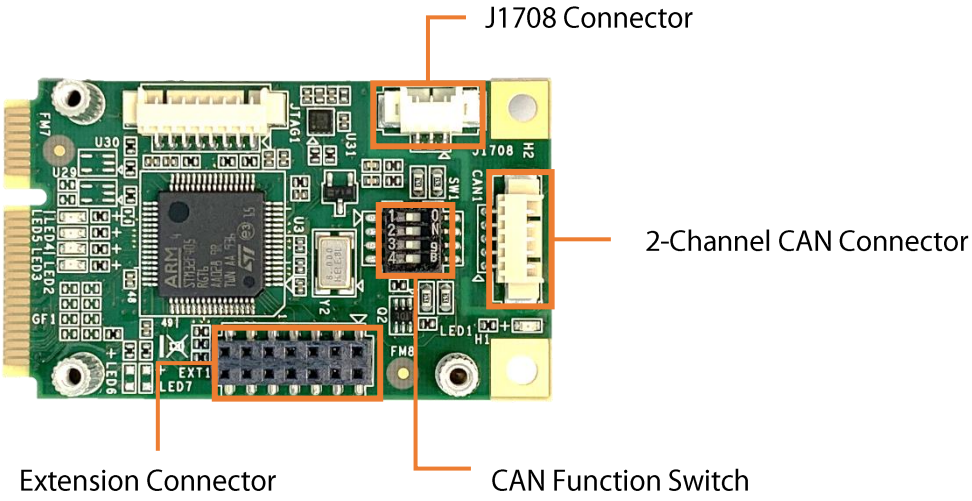
Antzer Tech GADN Series CAN bus with GNSS module is composed by FARO-FP module board and GNSS module board. Both modules are connected by 3 screws and 2x7 pin extension connector.

If you want to adjust the CAN function switch, release 3 screws and pull the GNSS module up carefully. Fast decomposing might damage the 7x2 pin of the GNSS modules

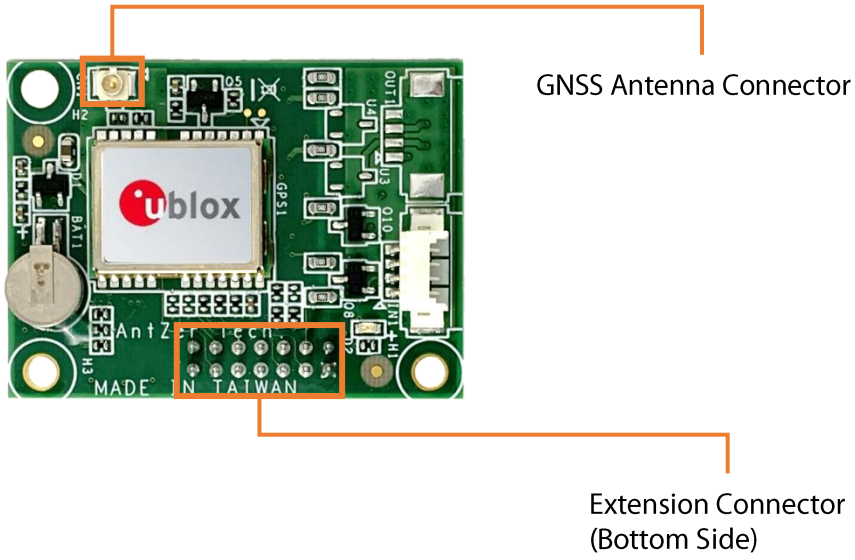


2.2. GADN Base Board

The positions of the CAN Connector, J1708 connector, Extension Connector and Termination Resistor on the GADN series base board.



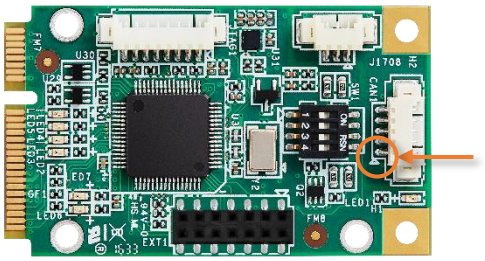
2.3. GNSS Extension Board



3. Connectors and Pin Assignment

3.1. CAN Bus Connector

The pin assignment of the CAN connector[1] of the GADN module is as follows:

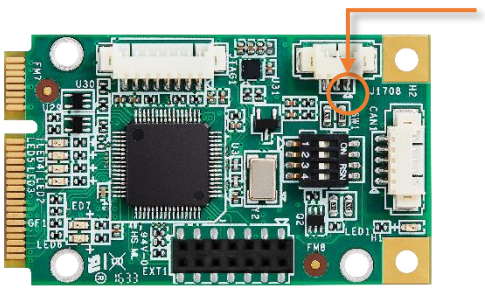


Pin #5	Port 1 CAN-H
Pin #4	Port 1 CAN-L
Pin #3	GND
Pin #2	Port 0 CAN-H
Pin #1	Port 0 CAN-L

If you need the optional CANbus cable set for the development, please refer to ***Appendix A Optional Cable & Accessory*** section for detail.

3.2. J1708 Connector

The pin assignment of the J1708 connector[2] of the GADN module is as follows:



Pin #1:	D-
Pin #2:	GND
Pin #3:	D+

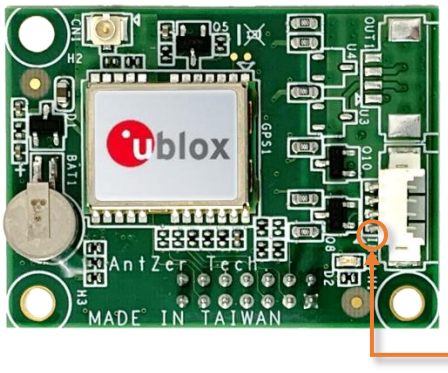
If you need the optional CANbus cable set for the development, please refer to ***Appendix A Optional Cable & Accessory*** section for detail.

1 Connector type: MOLEX PicoBlade™ Wire-to-Wire and Wire-to-Board Housing. The part number of the matching plug: 51021-0500 1.25 Pitch

2 Connector type: MOLEX PicoBlade™ Wire-to-Wire and Wire-to-Board Housing. The part number of the matching plug: 51021-0400 1.25 Pitch

3.3. ADR Connector

The pin assignment of the ADR connector[3] of the GADN module is as follows:

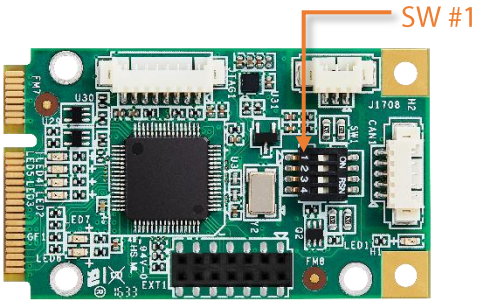


Pin #4	GND
Pin #3	Wheel-tick Signal
Pin #2	BWD/FWD Signal
Pin #1	NC

[3] Connector type: MOLEX PicoBlade™ Wire-to-Wire and Wire-to-Board Housing. The part number of the matching plug: 53261-0471 1.25 Pitch

4. CAN Function Switch

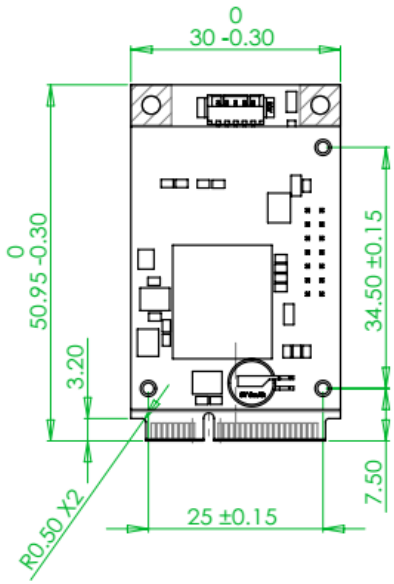
The Termination Resistor Switch enables the user to change the 120-ohm resistor quickly. Not requires the specific cable.

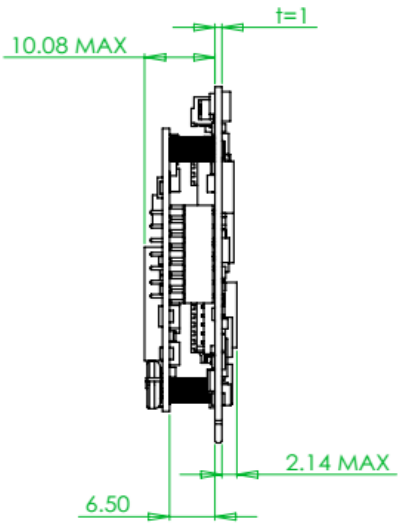


SW #1: CAN Port 1 Terminal Resistor (Default Off)
SW #2: NC (Default Off)
SW #3: CAN Port 0 TX On/Off (Default On)
SW #4: CAN Port 0 Terminal Resistor (Default Off)
ON: Enable / OFF: Disable

5. Dimension Drawing

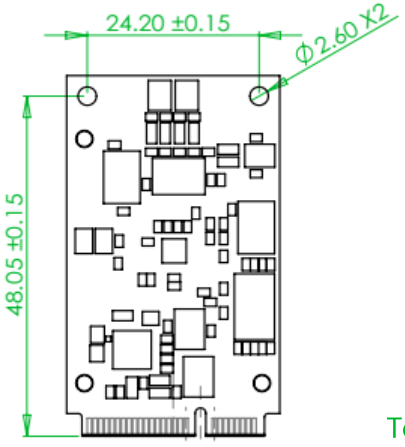
5.1. Top & Side View





Tolerance: 0.1mm

5.2. Bottom View



Tolerance: 0.1mm

6. Installation

Risk of ESD damages caused by improper handling!
Use ESD protective measures to avoid equipment damage.

6.1. Driver Installation

For the operation of the GADN CANbus with GNSS module a driver is needed.

Windows

- Install Windows driver. (see FARO/GADN SDK REFERENCE MANUAL)

Linux

- Support by Project. Please contact your Antzer Tech sales windows.

6.2. Hardware Installation

- Make sure driver is installed.
- Turn off computer.
- Pull power cord.
- Open computer case according to instructions of computer manufacturer.
- Determine corresponding slot.
- Plug PC connector in corresponding slot, without using force.
- Make sure the interface is securely held in computer.
- Close computer case.
- Hardware installation is complete

7. Reliability Specifications

7.1. Environmental

Antzer Tech GADN CANbus with GNSS Mini PCI-E module environmental specifications follow MIL-STD-810G, as indicated in the following table.

Environment	Specifications
Temperature	Operating: -40°C to 85°C (without Li-Coin Battery) Operating: -20°C to 60°C (with Li-Coin Battery)
Vibration	Operating: Random, 7.69(Grms), 20~2000(Hz) Compliant with MIL-STD-810G

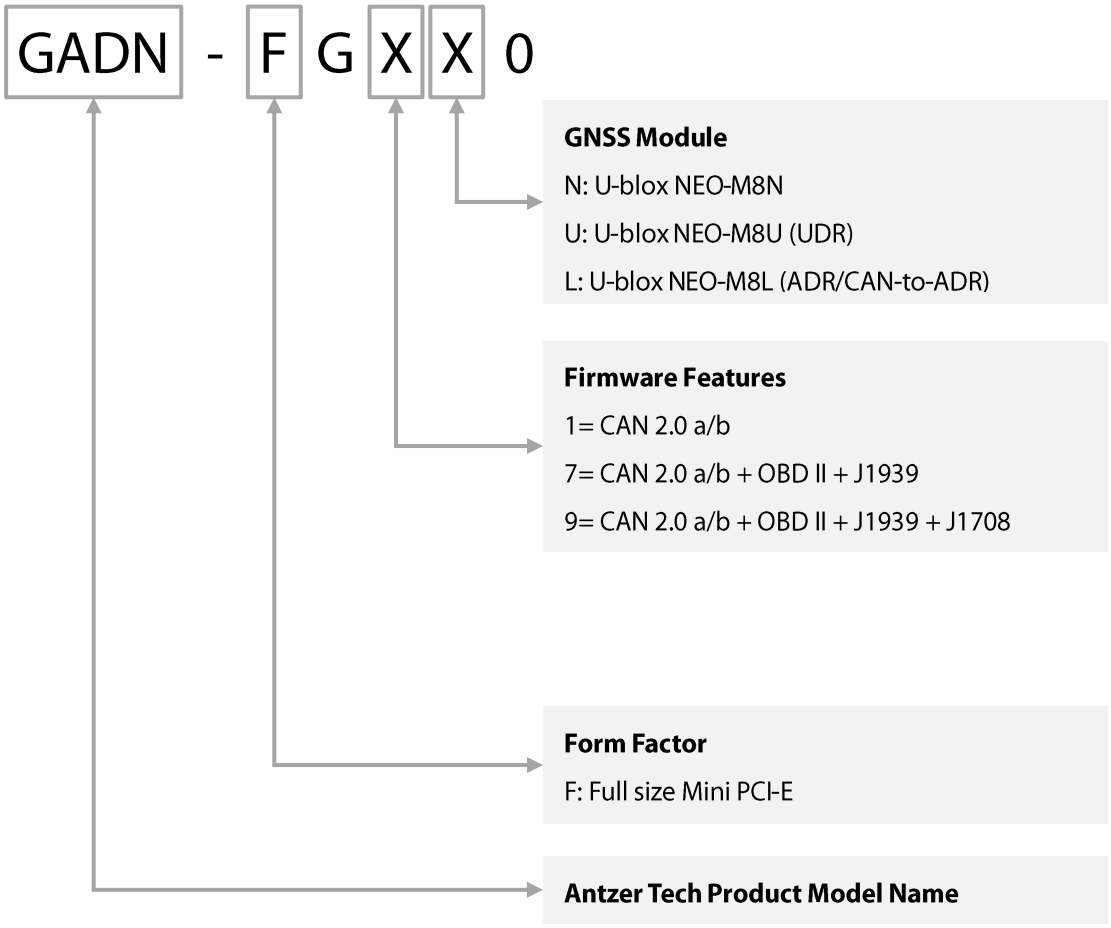
7.2. Certification and Compliance

Antzer Tech GADN CANbus Mini PCI-E module complies with the following standards:

- CE
- FCC
- RoHS
- MIL-STD-810G Vibration Compliant

8. Ordering Information

8.1. Product Code Designations



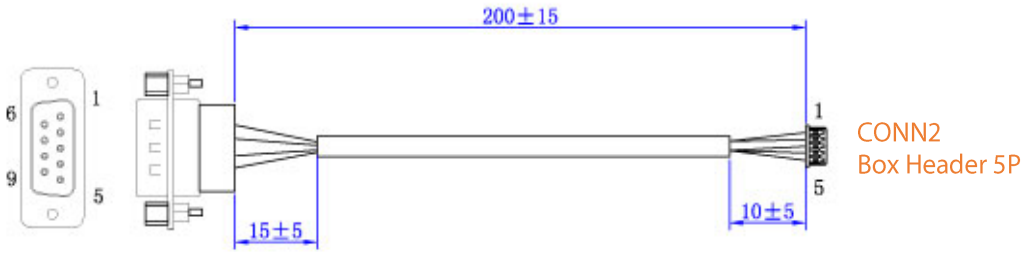
8.2. GADN CAN Bus with GNSS Mini PCI-E Module Product Part Number

Part Number	Description
GADN-FG1N0	CANbus and GNSS Combo Module CAN*2 Gyro, Acce, USB I/F, NEO-M8N
GADN-FG7N0	CANbus and GNSS Combo Module CAN*2 OBDII, J1939, Gyro, Acce, USB I/F, NEO-M8N
GADN-FG9N0	CANbus and GNSS Combo Module CAN*2 OBDII, J1708, J1939, Gyro, Acce, USB I/F, NEO-M8N
GADN-FG1U0	CANbus and GNSS Combo Module CAN*2 Gyro, Acce, USB I/F, NEO-M8U
GADN-FG7U0	CANbus and GNSS Combo Module CAN*2 OBDII, J1939, Gyro, Acce, USB I/F, NEO-M8U
GADN-FG9U0	CANbus and GNSS Combo Module CAN*2 OBDII, J1708, J1939, Gyro, Acce, USB I/F, NEO-M8U
GADN-FG1L0	CANbus and GNSS Combo Module CAN*2 Gyro, Acce, USB I/F, NEO-M8L
GADN-FG7L0	CANbus and GNSS Combo Module CAN*2 OBDII, J1939, Gyro, Acce, USB I/F, NEO-M8L
GADN-FG9L0	CANbus and GNSS Combo Module CAN*2 OBDII, J1708, J1939, Gyro, Acce, USB I/F, NEO-M8L

Appendix A Optional Cable & Accessory

1. **Part Number: T1700000008**

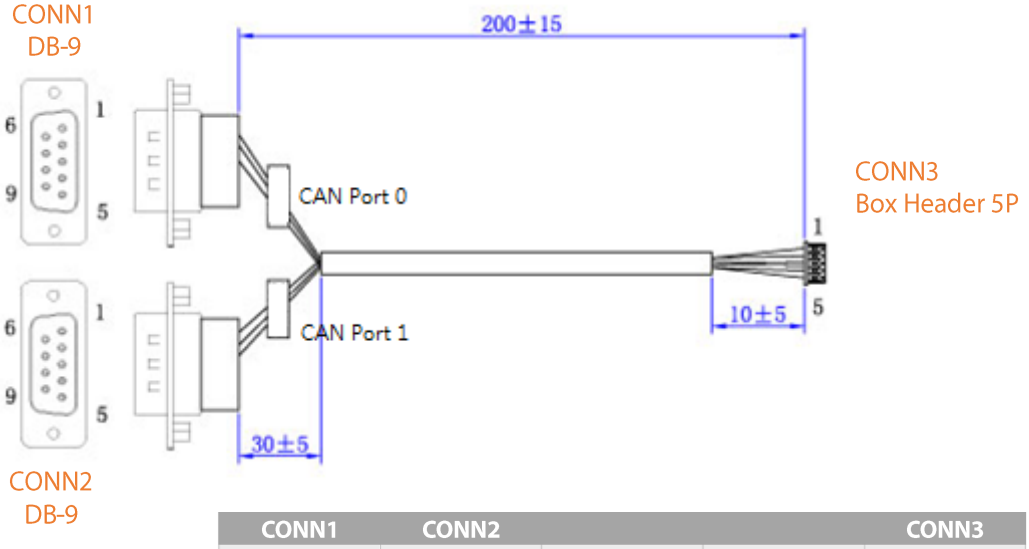
   FARO/GADN CANbus cable, Box Header 5P to DB9 Cable, 2 ch CAN, 200mm (CA0001)



CONN1			CONN2
PIN No.	FUNCTION	COLOR	PIN No.
2	Port 0 CAN L	WHITE	1
7	Port 0 CAN H	GREEN	2
3	GND	BLACK	3
4	Port 1 CAN L	WHITE	4
5	Port 1 CAN H	BLUE	5

2. **Part Number: T1700000009**

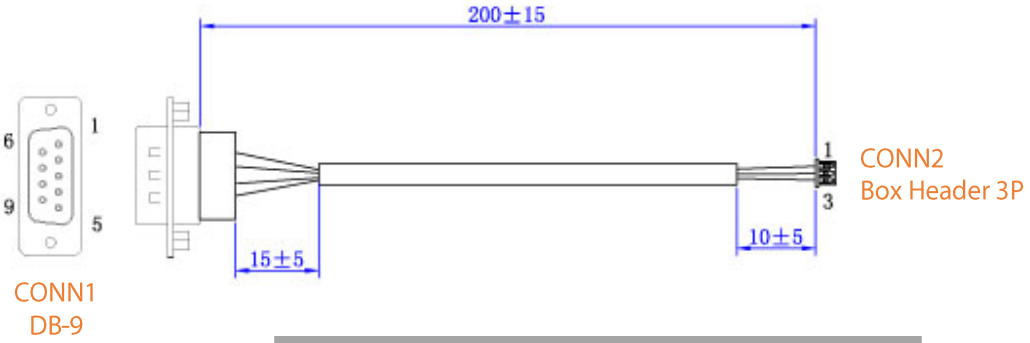
FARO/GADN CANbus cable, Box Header 5P to 2 DB9 Y Cable, 2 ch CAN, 200mm (CA0003)



CONN1	CONN2			CONN3
PIN No.	PIN No.	FUNCTION	COLOR	PIN No.
2		Port 0 CAN L	WHITE	1
7		Port 0 CAN H	GREEN	2
6		GND	BLACK	3
	2	Port 1 CAN L	WHITE	4
	7	Port 1 CAN H	GREEN	5
	6	GND	BLACK	3

3. **Part Number: T1700000010**

FARO/GADN J1708 cable, Box Header 3P to DB9 Cable, 1 ch J1708, 200mm (CA0005)



CONN1			CONN2
PIN No.	FUNCTION	COLOR	PIN No.
3	J1708_D-	WHITE	1
4	J1708_D+	BLUE	3
5	GND	BLACK	2

