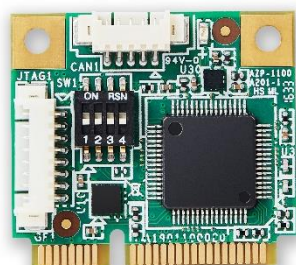


CANbus Mini PCI-E module

FARO Series USER MANUAL

Version 1.4.0

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Antzer Tech CANbus Mini PCIe Module User Manual

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1. Product Description

1.1. Introduction

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

1.2. Document History

Version	Date	Author	Description
1.0	6-Jun-16	Jocelyn Yang	First version of FARO user manual
1.1	26-Jul-16	James Chen	1. Update naming rule 2. Update ordering information
1.1.1	03-Aug-16	Jocelyn Yang	Modify naming rule
1.2	21-Oct-16	Jocelyn Yang	1. Update Product Picture 2. specification modify 3. CAN function switch modify
1.3	11-Jan-17	James Chen	1. Replace Section 3.2 content with J1708 connector 2. Add Appendix A
1.3.5	20-Dec-17	Irene Cheng	1.Add Socket CAN and FARO-FS910 in SPEC & ordering information 2.Add Support Linux Socket CAN 3.Pin definition Change (CAN1 → Port 0; CAN2 → Port 1)
1.4.0	15-Jun-18	Haney Huang	1. Removed FARO-FS910 SKU and 3 series product information 2. Updated S/W driver and SDK support list 3. Modified Cables P/N

2. Hardware Specification

Specifications	
Form Factor	Full size or Half Size Mini PCIe
Host Interface	Standard: USB 2.0 via PCI Express Mini Card Socket
Interface Number	CAN (ISO 11898) x 2 Individual Channels J1708 x 1 (FARO-FS900 Only)
Sensor	3D Gyroscope 3D Accelerometer
Protocol	OBD-II, J1939, and J1708
Identifier filtering	Mask and Identifier List Mode
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 Later
Operation Temp.	-40°C ~ 85°C
Vibration Test	Pass 7.69G@ 20~2000Hz, compliant with MIL-STD-810G
ESD Protection	8kV Contact, 15kV air
Dimension	Full Mini PCIE: 50.9 x 30 x 6.56mm
(L x W x H)	Half Mini PCIE: 26.8 x 30 x 6.56mm

3. Connector Overview

4.1 FARO-HS Series

The positions of the CAN connector and Termination Resistor on the FARO-HS series card.

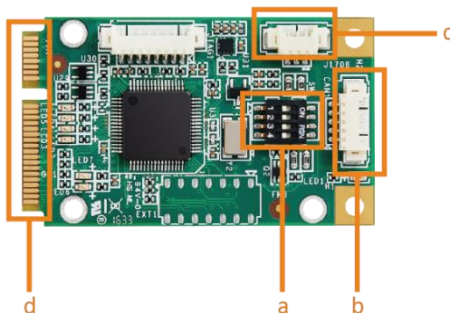


- a. CAN Function Switch
- b. 2-Channel CAN Connector

4.2 FARO-FS Series

The positions of the CAN Connector, J1708 connector, Extension Connector and Termination Resistor on the FARO-FS series card.

I/O Connectors

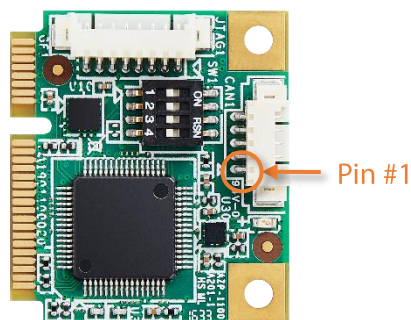


- a. CAN Function Switch
- b. 2-Channel CAN Connector
- c. J1708 Connector
- d. Golden Finger Pin to Mini-PCIe Slot

4. Connectors and Pin Assignment

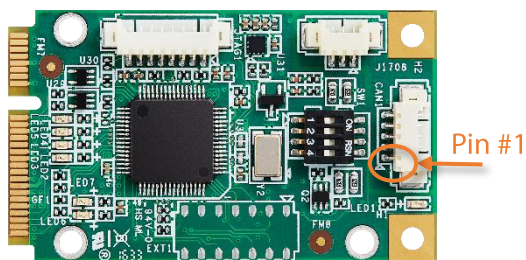
4.1 CANbus Connector

The pin assignment between the D-Sub port and the 5-pin CAN connector¹ on the FARO-HS and FARO-FS cards are as follows:



FARO-HS Series

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



FARO-FS Series

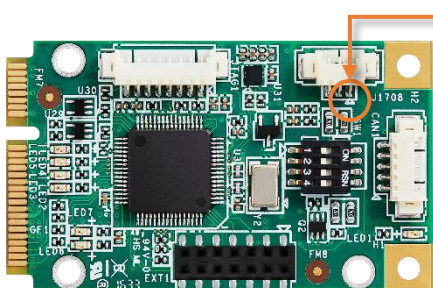
Pin #5: Port 1 CAN-H
Pin #4: Port 1 CAN-L
Pin #3: GND
Pin #2: Port 0 CAN-H
Pin #1: Port 0 CAN-L

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

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

4.2 J1708 Connector

The pin assignment of the J1708 connector² of the FARO-FS Series is as follows:



Pin #1

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

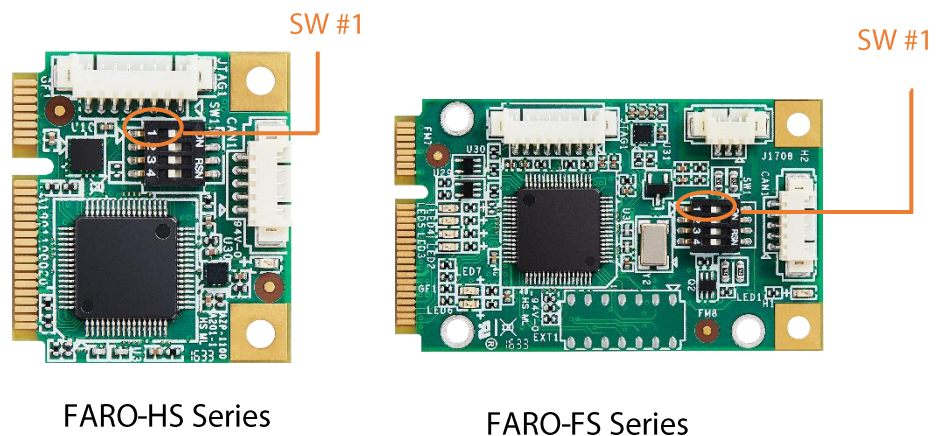
FARO-FS Series

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

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

5. CAN Function Switch

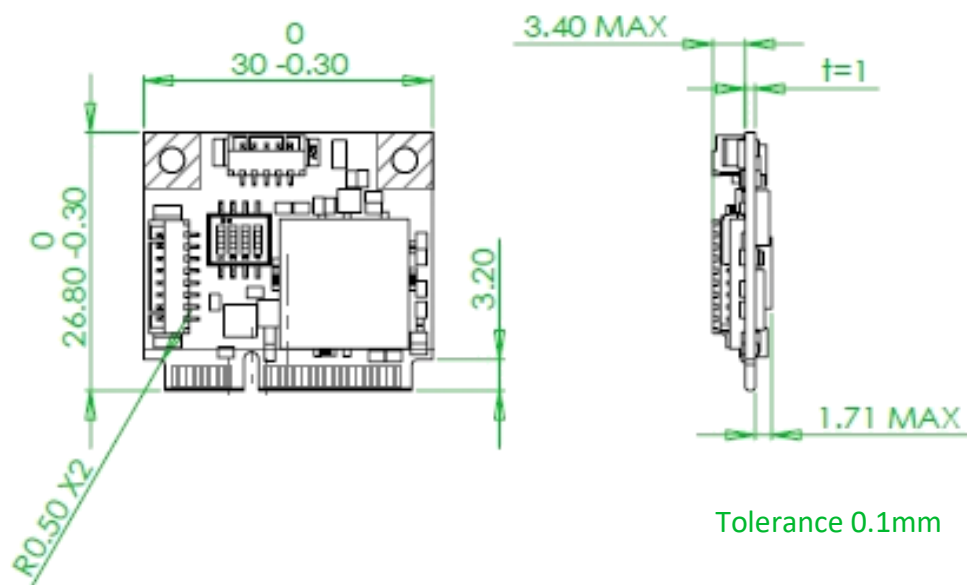
The Termination Resistor Switch enables the user to change the 120-ohm resistor quickly. Not requires the specific cable.



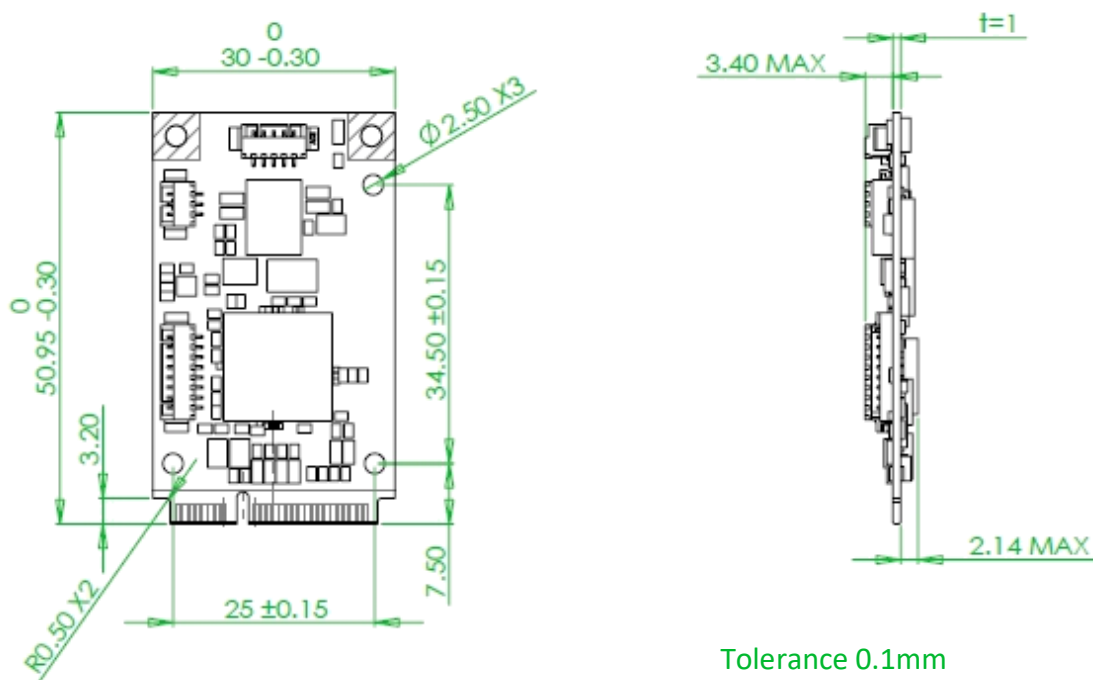
SW #1: CAN Port 1 Terminal Resistor (Default OFF)
SW #2: NC (Default OFF)
SW #3: CAN Port 0 TX On/Off (Default On)
SW #4: CAN Port 0 Terminal Resistor (Default OFF)
ON: Enable / OFF: Disable

6. Dimension Drawing

7.3 FARO-HS Series



7.4 FARO-FS Series



7. Installation



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

7.1 Driver Installation

For the operation of the FARO CANbus module a driver is needed.

Windows

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

Linux

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

7.2 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

8. Reliability Specifications

8.1 Environmental

Antzer Tech FARO CANbus 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
Vibration	Operating: Random, 7.69(Grms), 20~2000(Hz)

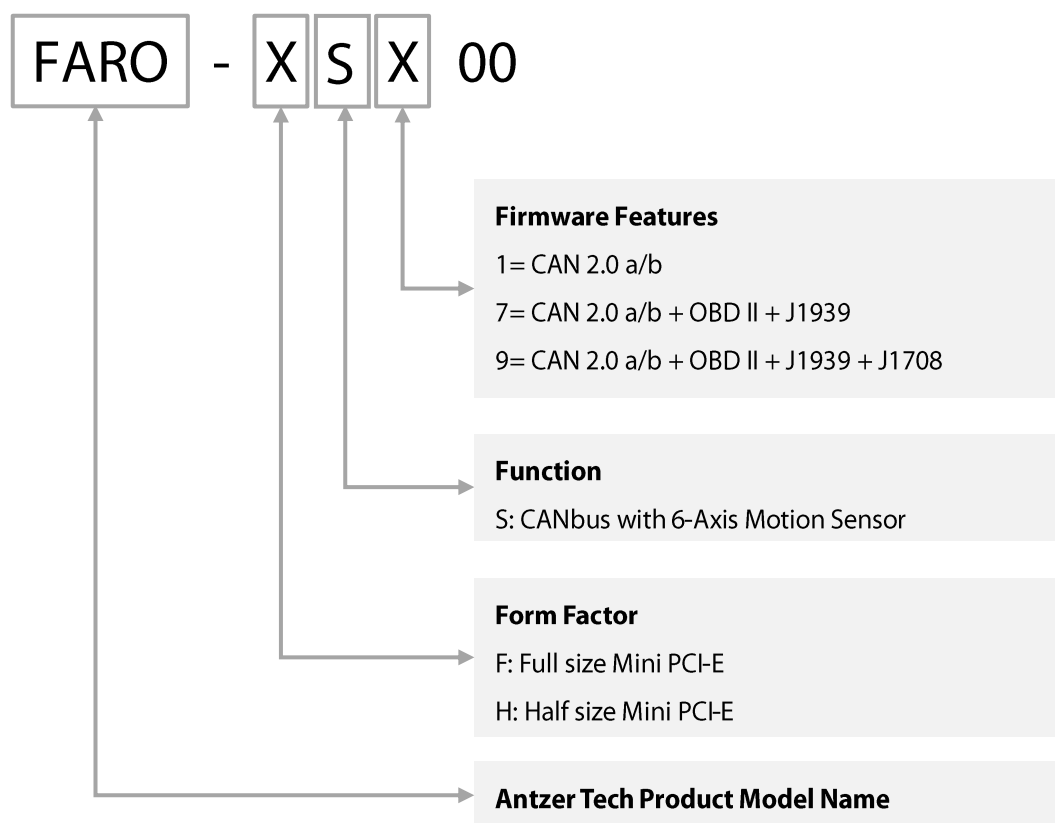
8.2 Certification and Compliance

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

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

9. Ordering Information

9.1 Product Code Designations



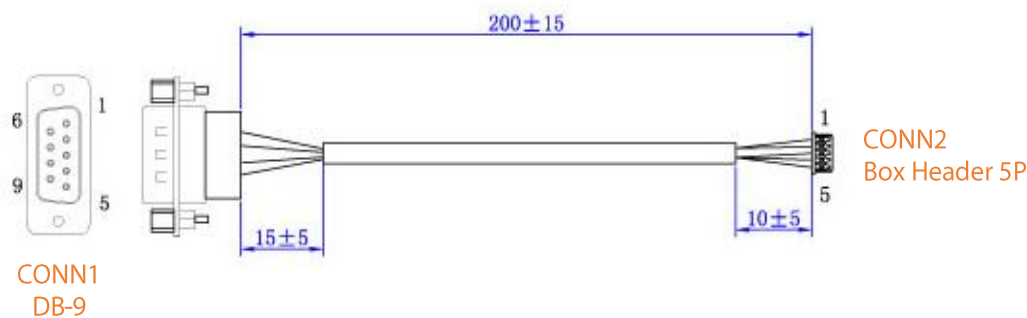
9.2 FARO CANbus Mini PCI-E Module Product Part Number

Part Number	Description
FARO-HS100	Half Mini PCIE(USB), 2 channels CAN 2.0A/B, Gyroscope, Accelerometer
FARO-HS700	Half Mini PCIE(USB), 2 channels CAN 2.0A/B, OBDII, J1939, Gyroscope, Accelerometer
FARO-FS900	Full Mini PCIE(USB), 2 channels CAN 2.0A/B, OBDII, J1939, x1 J1708, Gyroscope, Accelerometer

Appendix A Optional Cable & Accessory

1. **Part Number: T1700000008**

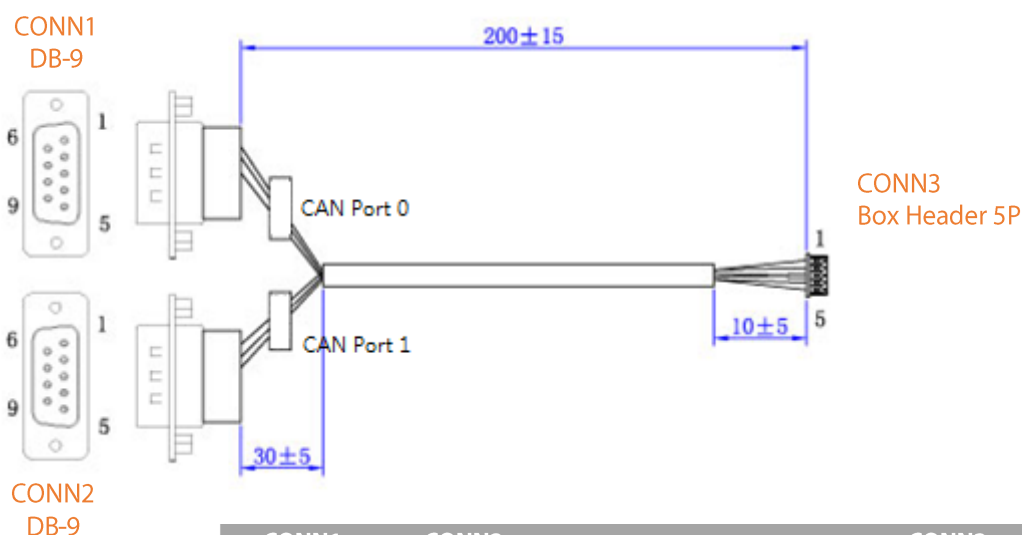
FARO/GADN CANbus cable, Box Header 5P to DB9 Cable, 2 ch CAN, 200mm
(CA0001)



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

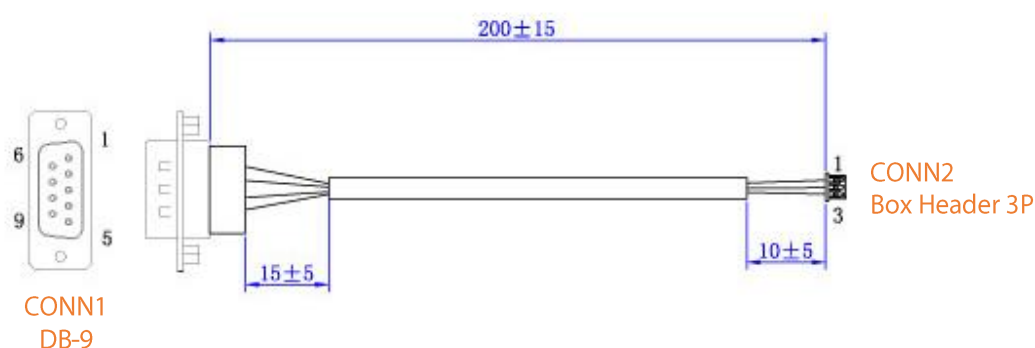
FARO/GADN CANbus cable, Box Header 5P to 2 DB9 Y Cable, 2 ch CAN, 200mm (CA0003)



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