User Manual

PCIeCANFD-200U/100U

PCIeCANFD Series CANFD Interface Cards

UM01010101 V1.00 Date: 2019/03/12 **Product User Manual**

Category	Contents
Keywords	General CANFD card for PCI-E interfaces
Abstract	PCIeCANFD-200U/100U is a CANFD high-performance interface card with PIC Express x1 specifications. The PC can be connected to the CAN through the PCI-E interface, which constitutes data collection and data processing in the CAN network fields such as laboratories, industrial control, and smart communities.

ZLG 致远电子

Revision History

Version	Date	Description
V0.90	2018/01/16	Created
V1.00	2018/04/10	Released
V1.01	2019/03/12	Updated the document header and footer, and "Sales and Service Network" content and added the "Disclaimer" content

Contents

1. Product Introduction

1.1 Product Overview

ZLG Electronics PCIeCANFD-200U/100U is a dual-port PCIe-CANFD communication interface card that meet PCI Express r1.0a specifications. PCIeCANFD-200U is a dual CAN interface, while PCIeCANFD-100U is a single CAN interface. The interface card supports the peripheral controller x1 interface for PCI Express multi-function devices, which allows the PC to be easily connected to the CAN bus. The plug and play function facilitates installation. Figure 1.1 shows the PCIeCANFD-200U appearance.

PCIeCANFD-200U provides two completely independent CAN channels, conforms to CAN2.0B specification (compatible with CAN 2.0A), supports higher rate CANFD, which enables convenient and flexible applications. To improve system performance, PCIeCANFD-200U communication card provides various functions, supports a high transmission rate of 5 Mbps, and integrates 3,500 VDC electrical isolation protection, which protects the computer from the influence of ground circulation and enhances the system reliability in harsh environments.

Note: PCIeCANFD-200U and PCIeCANFD-100U are collectively referred to as PCIeCANFD interface cards below.

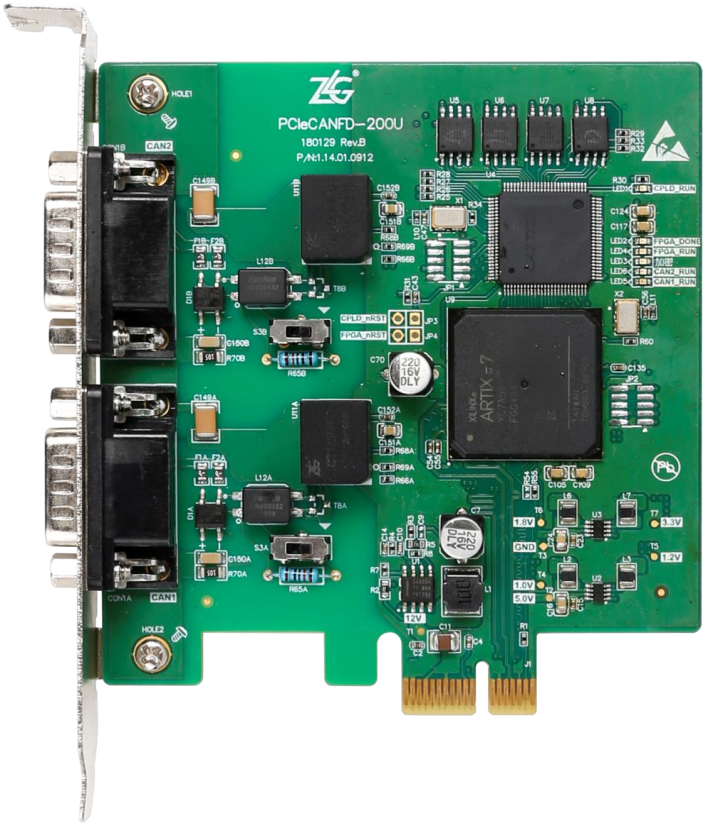


Figure 1.1 PCIeCANFD-200U

1.2 Functions

- PC interface: high-speed PCIe interface, PCI Express x1 specification, compatible with x8, x16 and other PCI Express slots;

- Support CAN2.0A and B protocol and comply with ISO11898-1 specification;
- Compatible with high-speed CAN and CANFD;
- The CAN interface is electrically isolated from 3,500 V DC;
- The CAN communication baud rate can be arbitrarily programmable between 4 Kbps and 1 Mbps;
- The CANFD baud rate can be arbitrarily programmable between 1 Mbps and 5 Mbps;
- Maximum data flow for single channel transmission: 4,000 frames per second (remote frame, single frame transmission);
- The highest data flow rate received by a single channel: 10,000 frames per second (remote frame);
- Built-in 120 ohm terminal resistance, which can control access and disconnection;
- Support ZCANPRO test software (support Windows 7 and Windows 10);
- Operating temperature: 0°C to 80°C;
- Storage temperature: -20°C to +70°C;
- Length, width and height: 102.6 mm x 120.02 mm x 21.59 mm.

1.3 Product Specifications

1.3.1 Electrical Specifications

The PCIeCANFD interface card needs an electrical environment to work safely and stably. Table 1.1 lists the electrical parameters of the interface card. Exceeding the parameters listed in the table may cause the product to work unstable and fail, or even burn the module.

Table 1.1 Electrical specifications of PCIeCANFD interface card

Item		Test Conditions	Minimum	Typical Value	Maximum	Unit
Working voltage	PCIe interface power supply 12V	Two CAN transceivers	11	12	13	V
Operating current	External input DC power supply	VIN=12V	--	85	--	mA
CAN interface	Bus pin withstand voltage	CANH, CAHL	-42	--	42	V
	Terminal resistance	Enable terminal resistance	--	120	--	Ω
	Isolation withstand voltage	Leakage current less than 1 mA	--	3500	--	VDC

1.3.2 Operating Temperature

The applicable operating temperature range of PCIeCANFD interface card: 0°C to +80°C. Using the interface card in too low or too high ambient temperature will make it work abnormally and shorten its service life.

1.4 Typical Applications

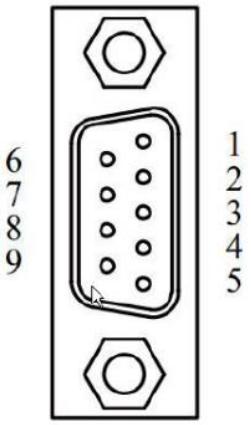
- CAN(FD)-Bus network diagnosis and test
- Electric power communication network
- Industrial control equipment
- High-speed, large data volume communication

2. Hardware Interfaces

2.1 CAN Communication Interface

The CAN communication interface of the PCIeCANFD interface card uses a DB9 connector, and the signal definition of the interface pins meets the requirements of the CiA standard. Table 2.1 lists the signal definition of the DB9 pin.

Table 2.1 DB9 pin signal definition

Pin	Signal	Description	Figure
1	--	Reserved	
2	CAN_L	CAN bus dominance is low	
3	CAN_GND	CAN reference ground	
4	--	Reserved	
5	CAN_SHLD	CAN shield ground	
6	CAN_GND	CAN reference ground	
7	CAN_H	CAN bus is highly dominant	
8	--	Reserved	
9	--	Reserved	

2.2 Terminal Resistance

Each CAN channel of PCIeCANFD interface card has built-in 120 ohm terminal resistance. The interface card connects or disconnects the terminal resistance through a DIP switch. Figure 2.1 shows the position of the DIP switch. Before product delivery, the terminal resistance is connected by default. The terminal resistance can be flexibly configured in the actual CAN network.

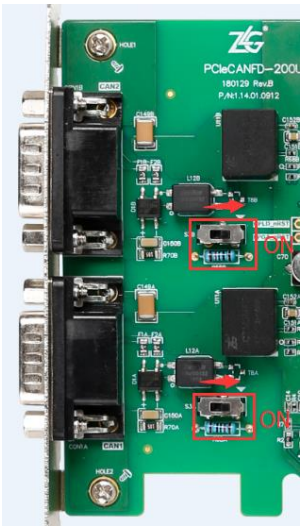


Figure 2.1 Terminal resistance settings

2.3 System Connections

When the PCIeCANFD interface card is connected to the CAN-bus bus, you need only to connect CAN_L to CAN_L and CAN_H to CAN_H signals. The CAN-bus network adopts a linear topology, and the two terminals of the bus need to be installed with a 120 ohm terminal resistor; if the number of nodes is greater than 2, the 120 ohm terminal resistor is not required for the intermediate node. For branch connections, the length should not exceed 3 m. Figure 2.2 shows the CAN-bus bus connection.

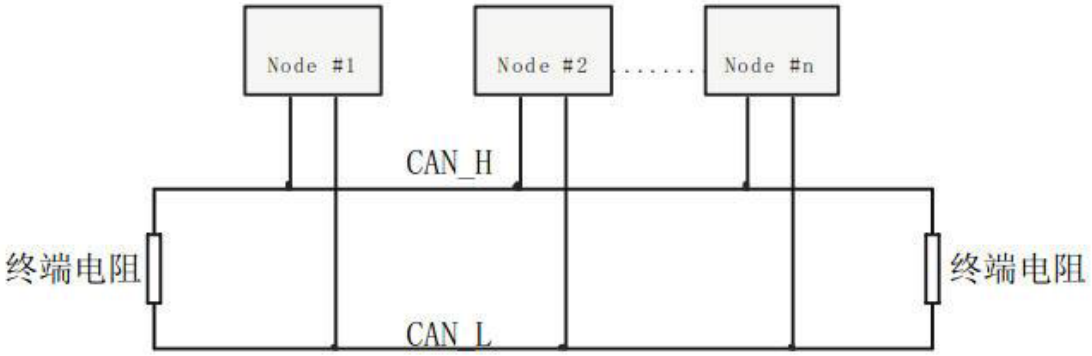


Figure 2.2 Linear topology of the CAN-bus network

In the CAN-bus network, shielded cables are often used for interconnection, so as to enhance the anti-interference ability. However, there are many types of shielded cables and field wiring is complicated. Therefore, the wiring diagrams of different types of cables in application are shown below, including the connection diagrams of double-core single-layer shielded cables, double-core double-layer shielded cable, and three-core single-layer shielded cable (The "equipment iron shell" in the pictures refers to the outer shell of the device, which is grounded by default). Regardless of the type of cable, reasonable changes must be made according to the complexity of the field wiring. Ensure reliable grounding of the single point of the shielded cable or ground wire at any time, and carry out on-site wiring in strict accordance with the wiring specifications, so as to minimize communication errors and exceptions and improve the communication quality and service life of the bus.

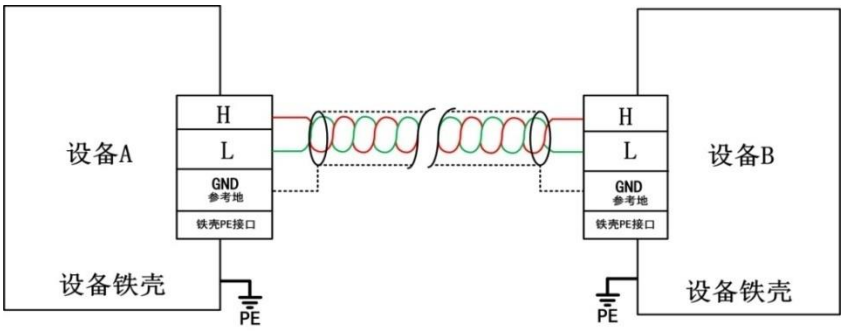


Figure 2.3 Double-core single-layer shielded cable connection

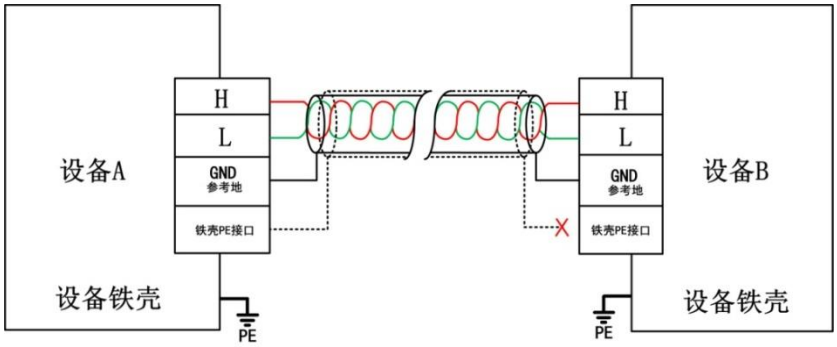


Figure 2.4 Double-core double-layer shielded cable connection

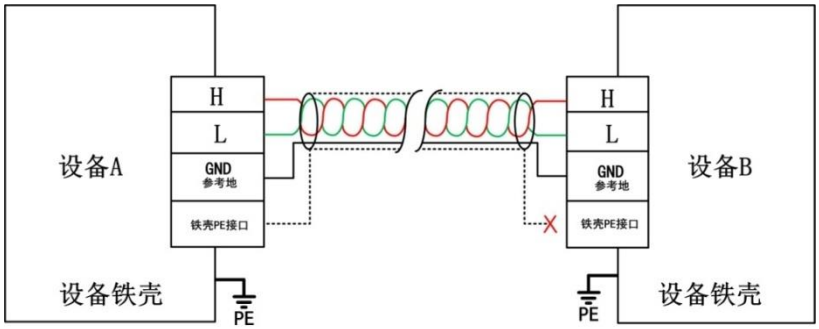


Figure 2.5 Three-core single-layer shielded cable connection

3. Driver Installation

This document uses a PC running Windows 7 as an example to describe how to install the PCIeCANFD-200U (100U) driver.

3.1 Installing the Driver under Windows

When the computer is shut down, insert the PCIeCANFD interface card into the PCIe card slot of the computer, and start the computer.

Click the official driver installation application pcie-canfd-x00u-install.exe to display the driver software interface, as shown in Figure 3.1.

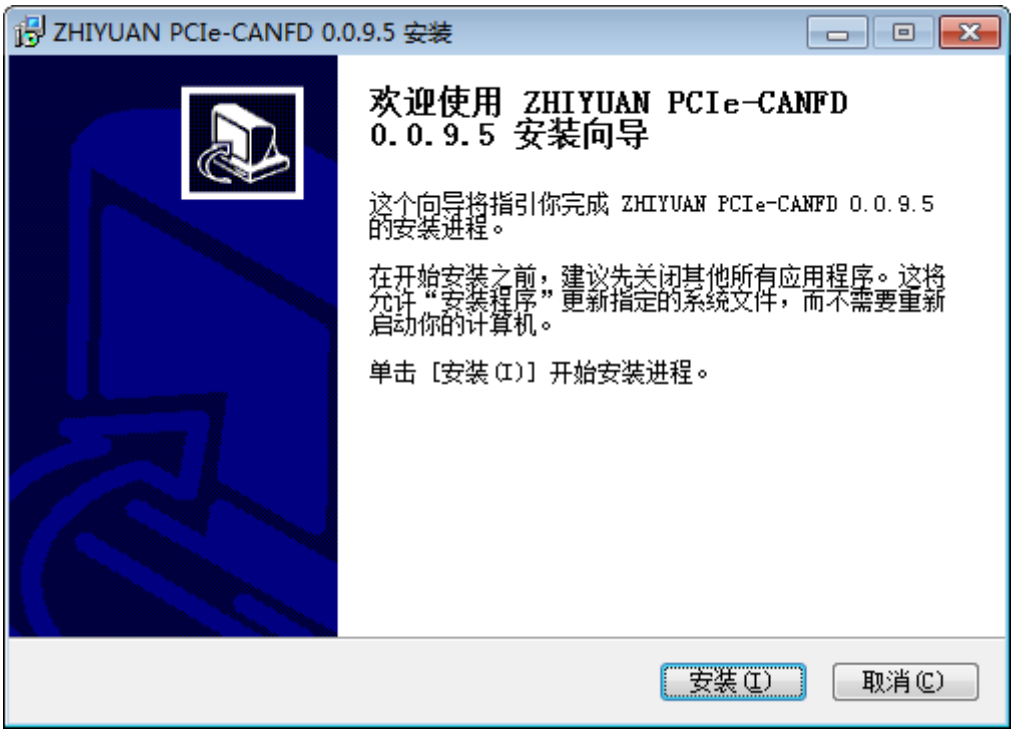


Figure 3.1 Driver software

As shown in Figure 3.2, click [Install] and wait until the driver is installed.

Figure 3.2 Installing the driver

After the installation is complete, the "Completing" dialog box appears. Click the [Finish] button to complete the installation, as shown in Figure 3.3.

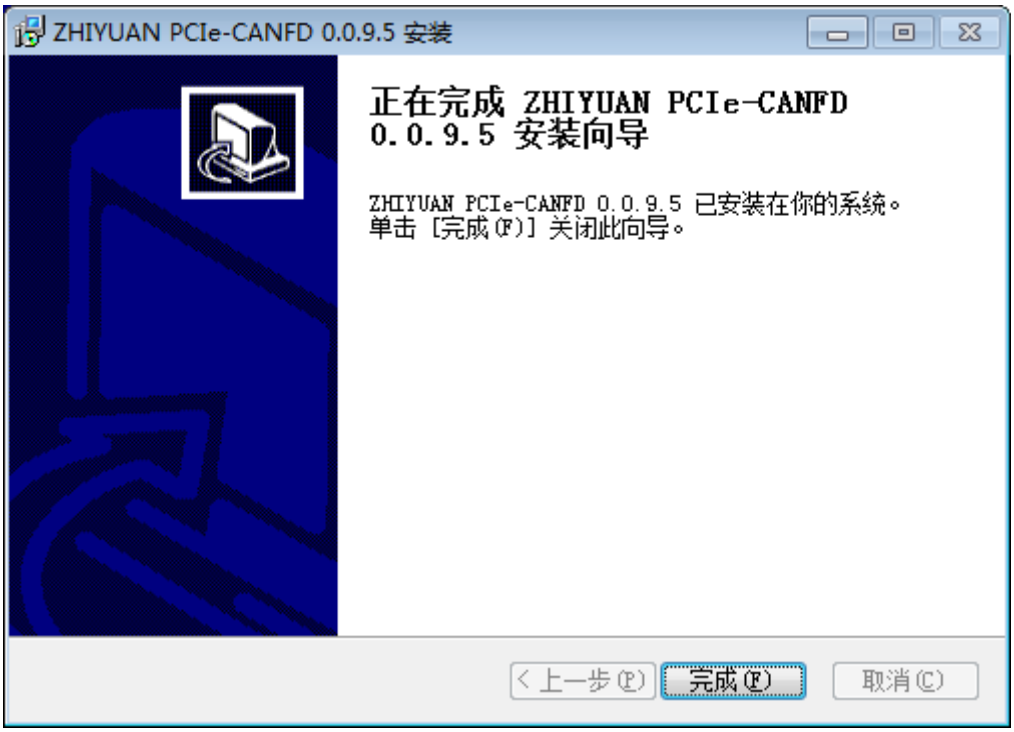
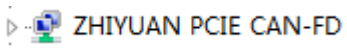


Figure 3.3 Driver installation complete

After the driver is installed, if the PCIeCANFD interface card is normal, 

appears in the device manager, indicating that the driver is installed correctly and a PCIeCANFD interface card is inserted. In this case, the CANFD card has been connected to the PC, and the host computer software can be used to send and receive CAN (FD) messages. It is recommended to use the ZCANPRO software provided by ZLG Electronics as the host computer software. Users can also develop their own host computer software by using the provided secondary development function library.

4. Inspection and Maintenance

The main electrical components of the PCIeCANFD interface card are semiconductor components. Although it has a long life, it may also age quickly under inappropriate conditions. Carry out periodic inspections to ensure that the required conditions are maintained. It is recommended to check at least once every 6 months to a year. More frequent inspections should be carried out in unfavorable environmental conditions, .

If you encounter a problem during the maintenance, see table 4.1 to identify the fault cause. If the fault persists, please contact Guangzhou ZLG Electronics Co., Ltd.

Table 4.1 Inspection and maintenance

No.	Item	Inspection	Standard	Action
1	Power supply	Check computer voltage fluctuations	PCIe card slot power supply 12V±8%	Check the computer power supply. Take necessary measures to keep the voltage fluctuation within the range
2	Surrounding environment	Check the ambient temperature (including the internal temperature of the enclosed environment)	0°C to 80°C	Use a thermometer to check the temperature and ensure that the ambient temperature is kept within the allowable range
		Check the ambient humidity (including the internal humidity of the enclosed environment)	The relative humidity must be between 10% and 90% when there is no air conditioner	Use a hygrometer to check the humidity and ensure that the ambient humidity is kept within the allowable range
		Check for dust, powder, salt, metal chips	No accumulation	Clean and protect equipment
		Check that water, oil or chemical spray should not hit the equipment	No spray hits the device	To clean and protect the equipment
		Check for corrosive or flammable gases in the equipment area	No corrosive or flammable gas	Check by smelling or using a sensor
		Check vibration and shock levels	Vibration and shock are within the specified range	If necessary, install gaskets or other shock absorbers
		Check the noise source near the equipment	No significant noise signal source	Isolate the device from the noise source or protect the device
3	Installation and Wiring	Check that each unit is securely connected and has been safely locked with the next unit	No looseness	Press the connectors together completely and lock them with the slider

5. Packing List

Table 5.1 PCIeCANFD-200U Packing List V1.00

No.	Name	Quantity	Unit	Remarks
1	PCIeCANFD-200U interface card	1	Piece	
2	Product CD-ROM	1	Piece	
3	After-sales Service Guide	1	Pcs	
4	Certificate of Conformity	1	Piece	

6. Quick User Guide

6.1 Introduction to ZCANPRO Software

ZCANPRO is the supporting software for CAN/CANFD series products produced by Guangzhou ZLG Electronics Co., Ltd.,
which can perform operations such as raw data transmission and reception, data playback, and high-level protocol analysis. The software is easy to operate and powerful, and it is a good helper for CAN bus testing, monitoring, diagnosis, and development.

ZCANPRO software can be downloaded from the ZLG Electronics official website http://www.zlg.cn.

6.2 Using USBCANFD on ZCANPRO

After the device driver and ZCANPRO are installed, you can use USBCANFD on the ZCANPRO software.

For details about how to use USBCANFD on ZCANPRO, click  in the upper right corner of the software main interface and select [Quick Use Guide] in the drop-down box (as shown in Figure 4.1). For detailed instructions for the ZCANPRO software, see [User Manual].

Figure 4.1 Opening the Quick Guide

7. Disclaimer

Based on the principle of providing better service for users, Guangzhou ZLG Electronics Co., Ltd. ("ZLG Electronics") will try to present detailed and accurate product information to users in this manual. However, due to the effectiveness of this manual within a particular period of time, ZLG Electronics does not guarantee the applicability of this document at any time. ZLG Electronics shall reserve the right to update this manual without prior notice. To get the latest version, please visit the official website of ZLG Electronics regularly or contact ZLG Electronics. Thank you!

Right to modify the document

Guangzhou ZLG Electronics Co., Ltd. shall reserve the right to modify related documents of PCIeCANFD interface card series products at any time without prior declaration.

ESD protection

The PCIeCANFD interface card series products have electrostatic protection capabilities to ensure the stable operation of the products. When using PCIeCANFD interface card series products, first discharge the static electricity on the body. For example, wear a reliable grounding static ring, or touch a water pipe connected to the earth.

Stay Truthful for Win-win Results, Continuous Learning, Customer Oriented, Professional and Concentrated, Always be the No. 1

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