User Manual

NXI-1401 CAN Communication Converter Module

Hunan Next Generation Instrumental T&C Tech. Co., Ltd.

Version: V20230708

Contents

1 Preface

Dear Customers,

First of all, we greatly appreciate your choice of NXI-1401 series CAN communication converter module(NXI-1401 for short). We are also honored to introduce our company, Hunan Next Generation Instrumental T&C Tech. Co., Ltd. (NGI for short).

About Company

NGI is a professional manufacturer of intelligent equipment and test & control instruments, committed to developing, manufacturing battery simulators, power supplies, electronic loads, modular instruments, and many more instruments. The products can be widely used in the industries of battery, power supply, fuel cell, consumer electronics, new energy vehicle, semiconductor, etc.

NGI maintains close cooperation with many universities and scientific research institutions, and maintains close ties with many industry leaders. We strive to develop high-quality, technology-leading products, provide high-end technologies, and continue to explore new industry measurement and control solutions.

About User Manual

This manual is applied to NXI-1401 series CAN communication converter module, including installation, operation, specifications and other detailed information. The copyright of the manual is owned by NGI. Due to the upgrade of instrument, this manual may be revised without notice in future versions.

This manual has been reviewed carefully by NGI for the technical accuracy. The manufacturer declines all responsibility for possible errors in this operation manual, if due to misprints or errors in copying.The manufacturer is not liable for malfunctioning if the product has not correctly been operated.

To ensure the safety and correct use of NXI-1401, please read this manual carefully, especially the safety instructions.

Please keep this manual for future use.

Thanks for your trust and support.

2 Safety Instructions

In the operation and maintenance of the instrument, please strictly comply with the following safety instructions. Any performance regardless of attentions or specific warnings in other chapters of the manual may impair the protective functions provided by the instrument.
NGI shall not be liable for the results caused by the neglect of those instructions.

2.1 Safety Notes

- **Confirm the AC input voltage before supplying power**.
- **Reliable grounding**: Before operation, the instrument must be reliably grounded to avoid the electric shock.
- **Confirm the fuse**: Ensure to have installed the fuse correctly.
- **Do not open the chassis**: The operator cannot open the instrument chassis. Non-professional operators are not allowed to maintain or adjust it.
- **Do not operate under hazardous conditions**: Do not operate the instrument under flammable or explosive conditions.
- **Confirm the working range**: Make sure the DUT is within NXI-1401's rated range.

2.2 Safety Symbols

Please refer to the following table for definitions of international symbols used on the instrument or in the user manual.

Table 1

Symbol	Definition	Symbol	Definition
⎓	DC (direct current)	N	Null line or neutral line
~	AC (alternating current)	L	Live line
≂	AC and DC	I	Power-on
3~	Three-phase current	O	Power-off
⏚	Ground	⏻	Back-up power
⏚	Protective ground	▭	Power-on state
⏚	Chassis ground	▯	Power-off state
⊥	Signal ground	⚠	Risk of electric shock
WARNING	Hazardous sign	⚠	High temperature warning
Caution	Be careful	⚠	Warning

3 Product

3.1 Brief Introduction

The NXI-1401-2 is a communication converter Module. It can convert standard CAN protocol to Ethernet protocol data, single module supports two LAN interfaces compliant with CAN2.0A/B specification. The user can set baud rate, termination resistance and other parameters according to the actual situation. It is suitable for CAN communication related fields such as automotive electronics, new energy, industrial control, etc.

3.1.1 Features

- Single module 2 channels with inter-channel isolation
- CAN baud rate: 5kbps～1Mbps
- Built-in resistance: 120Ω (access optional)
- Support CAN2.0A/B specification
- CAN port supports 2000VDC voltage isolation
- Single card with single slot, applicable to NXI-F1000 chassis or independent use
- 12VDC power supply Input, support LAN communication for individual control

3.2 Appearance and Dimension

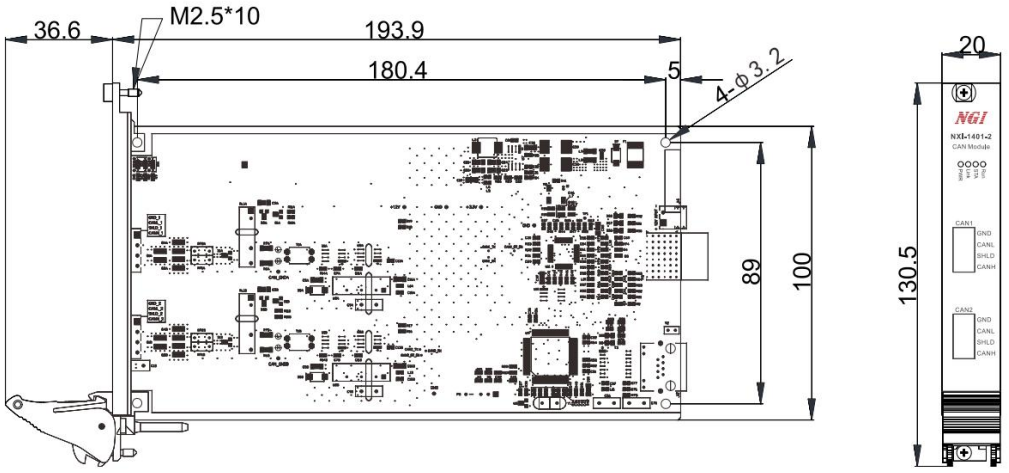


Figure 1 Dimension

3.3 Hardware Interface

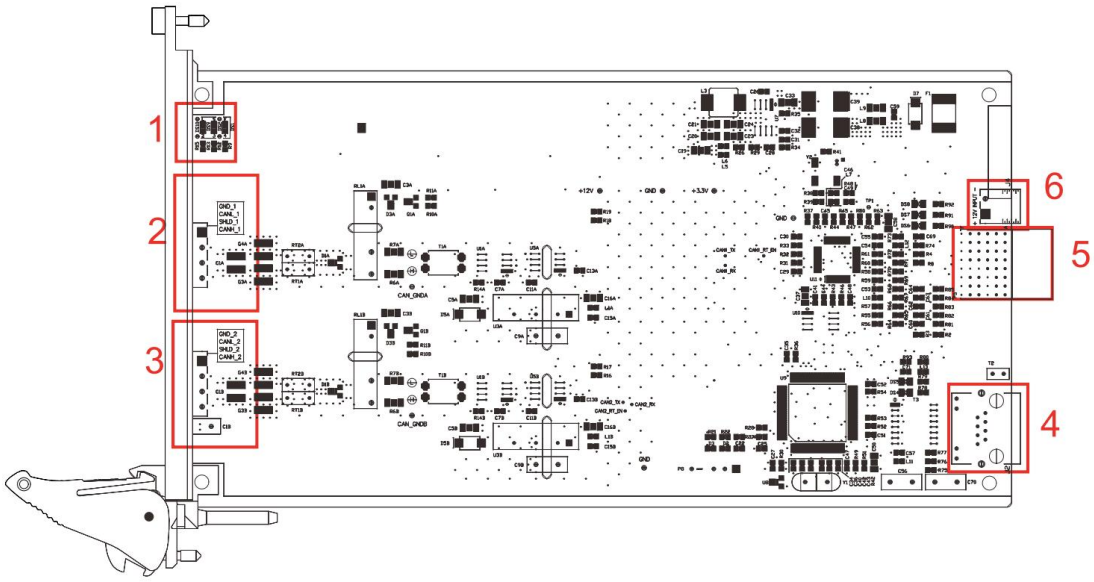


Figure 2 Interface

The following table is description of hardware interfaces on NXI-1401.

Table 2

Number	Description
1	Indicator light for NXI-1401, including Run, STA, Link, PWR
2	CAN 1 communication interface
3	CAN 2 communication interface
4	LAN connection terminal

5	Real panel connection terminal
6	12V input, power supply connection terminal

3.3.1 CAN Interface

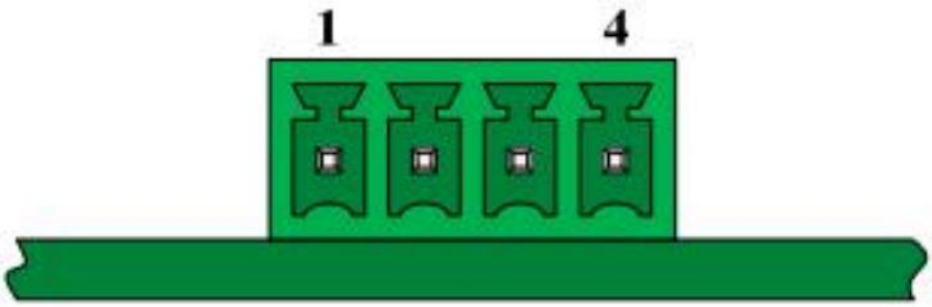


Figure 3 CAN Interface

Table 3

Number	Description
1	GND
2	CANL
3	SHLD
4	CANH

Note:

1. CAN_L and CAN_H should be twisted pairs as much as possible.
2. CAN1 and CAN2 wiring terminals in the same order.

3.3.2 LAN Port

The NXI-1401 adopts the standard RJ45 Ethernet interface, which is a common communication interface in the market, and it is very convenient for users to connect, operate and integrate the system.

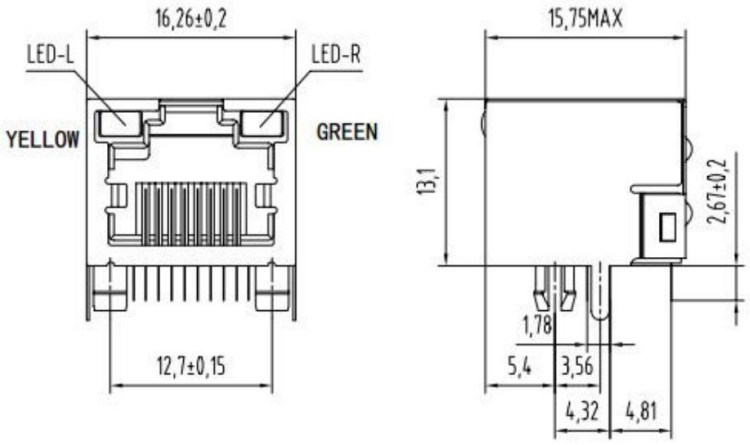


Figure 4 RJ45 Interface

When using a network cable to connect the local area network (LAN) to the instrument for communication, users can use the master computer to search for the IP of the instrument, then save the IP to access the instrument remotely.

If the master computer cannot access the instrument remotely, please check the following items:

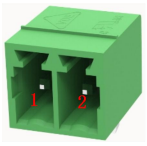
1. Please check whether the network cable connection between PC and instrument is loose.
2. Please check whether the Ethernet configuration information is correct.
3. PC Ethernet is enabled.
4. Is the IP address of the instrument and the IP address of the PC in the same gateway.

3.3.3 Status Light

Table 4

Pin	Signal	Definition
1	Run	Operation status light
2	STA	Event status light
3	Link	Communication status light
4	PWR	Power supply status light

3.3.4 12V Power Supply Interface



+12V INPUT-

Figure 5 12V DC Input Interface

Table 5

Pin	Definition	Description	Pin	Definition	Description
1	+	DC Input Positive	2	—	DC Input Negative

3.3.5 Rear Panel Connector

ERmet male B8 type/40Pin rear plane connector for module and chassis connection.

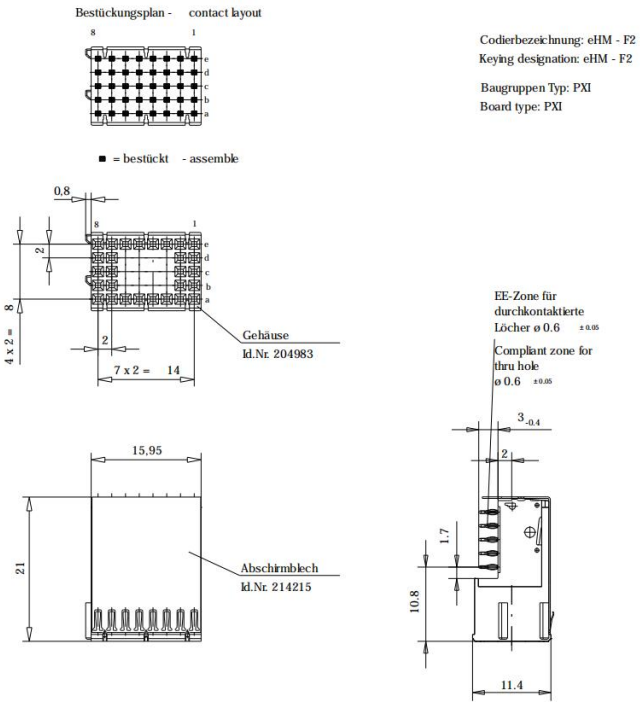


Figure 6 Rear Panel Connector Diagram

3.4 Instructions for Use

NXI-1401 is very easy to use, users only need to connect other CAN devices with NXI-1401 in accordance with the specified wiring sequence (the bus matching resistor should be controlled by the user according to the specific cases to access or disconnect), the master computer can receive or send CAN packets through the network, the use of the master computer instructions, please refer to the corresponding documents.

Note

1. When communicating, please connect or disconnect the matching resistor according to the specific use environment.
2. Under strong interference conditions, connect the metal shield (third pin) to the metal shield of the wire.
3. Please use the standard wire sequence network cable if using NXI-1401 alone.
4. Before communication, please note whether the light status is normal.
5. Matching Resistor Access Principle: Connect a 120 Ω resistor to each end of the CAN bus.

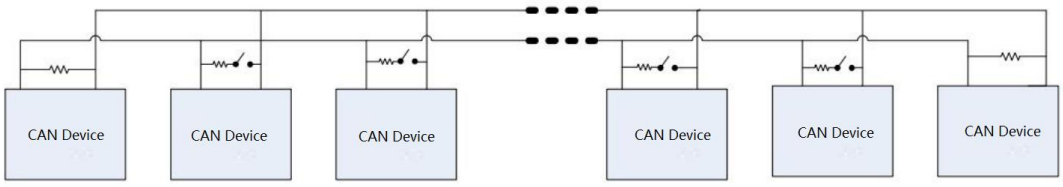


Figure 7 Diagram of CAN Bus Matching Resistor Connection without Relay

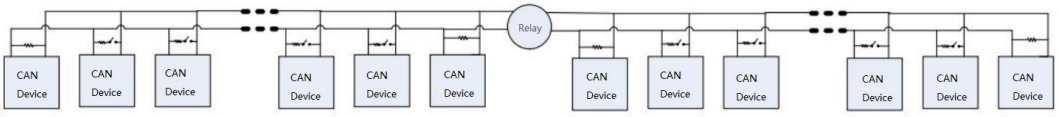


Figure 8 Diagram of CAN Bus Matching Resistor Connection with Relay

4 Maintenance and Self-inspection

4.1 Regular Maintenance

Clean the Device

Please wipe lightly the device with a dry or slightly wet cloth, and do not wipe the inside of it. Make sure the power is disconnected before cleaning.

> ⚠ **Warning: Disconnect power before cleaning.**

4.2 Fault Self-inspection

Device Fault Self-inspection

Due to system upgrade or hardware problem, the device may break down. Please do the following necessary inspection to eliminate the troubles, which can save your maintenance and time cost. If the troubles cannot be recovered, please contact NGI.

The inspection steps are as below.

- Check whether the device is powered.
- Check whether the device can be turned on normally.
- Check whether the fuse has no damage.
- Check whether other connectors are correct, including wire cables, plug, etc.
- Check whether the system configuration is correct.
- Check whether all the specifications and performances are within the device working range.
- Check whether the device displays error information.
- Operate on a replacement device.

Calibration Intervals

It is suggested that NXI-1401 series should be calibrated once a year.

5 Main Technical Data

Table 6

Model	NXI-1401
Channels	CAN1/CAN2
Baud Rate	Max. 1Mbps
Frame Type	Data Frame and Remote Frame
Frame Format	Standard Frame and Extended Frame
Matching Resistor	120Ω
Matching Resistor Access Method	Software control
Operating Voltage	12VDC
Operating Environment	-10℃ - 70℃
Relative Humidity	5% - 90%
Atmospheric Pressure	80 – 110kPa
Dimensions	230.5mm*20mm*130.5mm