

XIO211 EXPANSION FAMILY HARDWARE MANUAL

- XIO211-E0N-GD0-B2000 (16 Digital Input)
- XIO211-E0N-GD7-B4000 (8 Digital Output)
- XIO211-E0N-GD1-B4000 (16 Digital Output)
- XIO211-E0N-GD8-B6000 (8 Digital Input, 8 Digital Output)
- XIO211-E0N-GD5-B0000 (8 Relay)
- XIO211-E0N-GD2-B0401 (8 Analog Input, 0-20 mA / 0-10 V)
- XIO211-E0N-GD3-B0000 (8 Analog Output, 0-20 mA)
- XIO211-E0N-GD3-B0800 (8 Analog Output, 0-10 V)
- XIO211-E0N-GD9-B0000 (4 Analog Input, 4 Analog Output, 0-20 mA)
- XIO211-E0N-GD9-B0900 (4 Analog Input, 4 Analog Output, 0-10 V)
- XIO211-E0N-GD4-B0000 (6 RTD Input, PT1000)
- XIO211-E0N-GDY-B0000 (END Module)

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Preface



Mikrodev XIO211 series expansion modules are used together with MP211 series PLC and RTU300 series RTU(Remote Terminal Unit) products. There are 12 different types of XIO211 expansion modules:

- XIO211-E0N-GD0-B2000 (16 Digital Input)
- XIO211-E0N-GD7-B4000 (8 Digital Output)
- XIO211-E0N-GD1-B4000 (16 Digital Output)
- XIO211-E0N-GD8-B6000 (8 Digital Input, 8 Digital Output)
- XIO211-E0N-GD5-B0000 (8 Relay)
- XIO211-E0N-GD2-B0401 (8 Analog Input, 0-20 mA / 0-10 V)
- XIO211-E0N-GD3-B0000 (8 Analog Output, 0-20 mA)
- XIO211-E0N-GD3-B0800 (8 Analog Output, 0-10 V)
- XIO211-E0N-GD9-B0000 (4 Analog Input, 4 Analog Output, 0-20 mA)
- XIO211-E0N-GD9-B0900 (4 Analog Input, 4 Analog Output, 0-10 V)
- XIO211-E0N-GD4-B0000 (6 RTD Input, PT1000)
- XIO211-E0N-GDY-B0000 (END Module)

This document describes the hardware features of XIO211 series devices.

Please follow our website www.mikrodev.com for the up to date version of the document.

About Mikrodev



Since 2006, MIKRODEV has been developing and manufacturing industrial control and communication products. MIKRODEV serves the system integrators in the public and private sector, OEM and end users.

Our products are manufactured complying with the quality standards required by the industrial automation industry and the quality of our products are proved on the field for many years

MIKRODEV is one of the few companies in the world that has its own designed IEC 61131-3 compliant library for its programmable logic control devices. In addition, the open, flexible, programmable SCADA solution developed by MIKRODEV is also available to customers.

MIKRODEV products' performance and wide range of applications make them possible for customers to achieve faster, simplified and cost-effective results.

WARNING!

- ✓ Please take care of the following issues when using Mikrodev devices.
- ✓ Since the unit operates with 24 VDC (12-36 VDC) voltage, you should take care of the voltage level that the unit is connected to. If a voltage above this voltage level is applied, the device may be damaged and may be out of warranty.
- ✓ Make sure that the energy connection of your device is connected to the ground or to a properly grounded terminal.
- ✓ Make sure that the environment in which your device is being used is free of moisture, electric shock, vibration and dust.
- ✓ Pay attention to the supply voltage and the connections of the product. Mikrodev is not responsible for any issues due to power failure since there is no auxiliary supply (UPS) on the device.
- ✓ The fuse to be used must be a FF super fast type and current limit value 1A.
- ✓ Do not use the device under conditions other than the environmental conditions specified in the "Electrical Specifications" section (humidity, dust, liquid and temperature, etc.)
- ✓ Removing the warranty label on the product or removing the protective case will void the warranty.
- ✓ Products that are damaged, boxes have been changed and other brand labels are affixed are not covered by the warranty.
- ✓ The appliance must not be cleaned with solvents (thinner, benzene, acid etc.) or with abrasive cleaning agents.
- ✓ Only dry cloth should be used when cleaning the appliance.
- ✓ Do not open the device by removing the case of the appliance, do not interfere with the electronic components and circuits. There is no user-replaceable part inside the device.
- ✓ If there is a problem or malfunction on your device, it should only be repaired by an authorized service. Installation and electrical connections must be made by technical personnel in accordance with the instructions in the operating manual.

Failure to comply with these rules may result in death, serious injury or property damage

Mounting Information

DIN Rail Installation

First, the upper part of the device is mounted on the DIN rail. Then, with the help of the springs behind the device, when a lightly force is applied to the lower part, the device locates into the DIN rail easily and the montage is completed (See Figure 1).

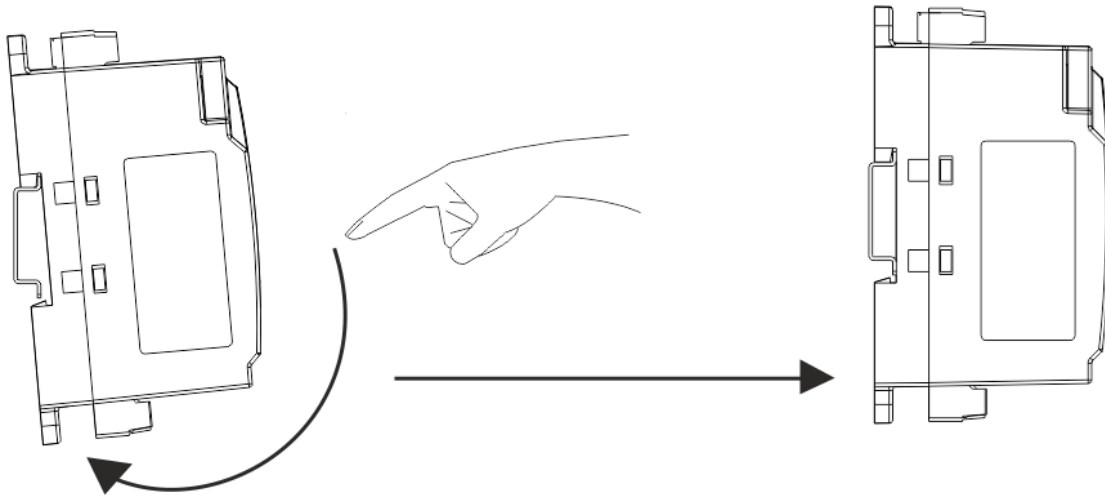


Figure 1 DIN Rail Mounting

Expansion Installation

Assembly between MP211 series PLC or RTU300 series RTU products and XIO211 series expansion modules is carried out by sliding the tabs over the rail so that the tabs overlap each other.

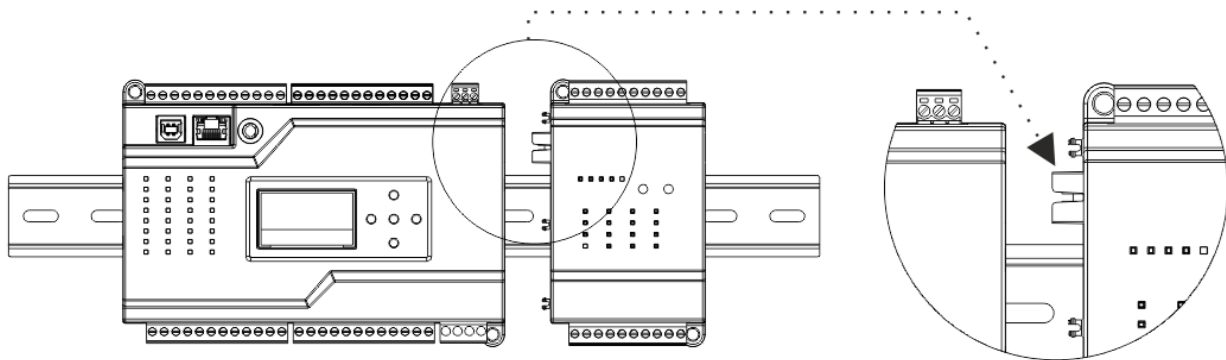


Figure 2 Expansion Module Mounting

1 XIO211 DIGITAL INPUT EXPANSION MODULES

1.1 GENERAL INFORMATION

1.1.1 GD0 Board Type(16 Digital Input) Physical Interfaces

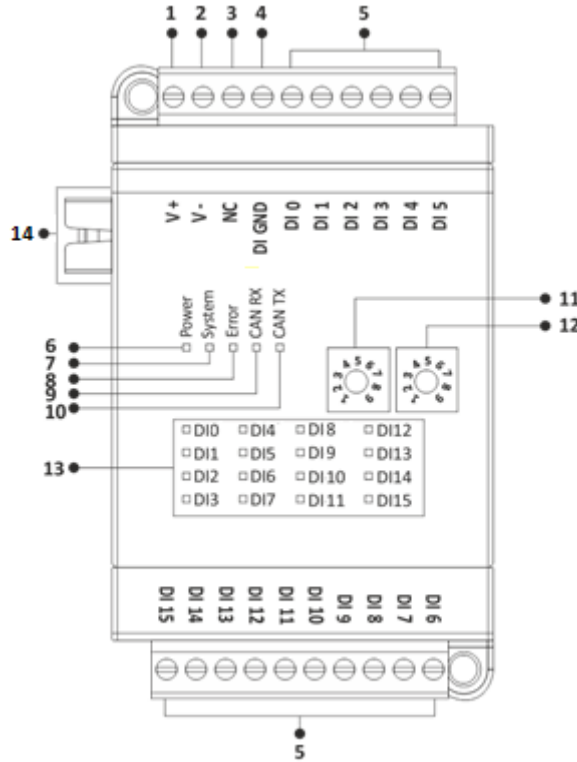


Figure 3 GD0 Board Type Connector and Physical Interfaces

1	Device Power (V+) Connection
2	Device Power (V-) Connection
3	N/A
4	Digital Input Ground Connection
5	Digital Input Connections
6	System Power LED
7	System Running LED
8	System Error LED
9	CANBUS Data Receiving LED
10	CANBUS Data Sending LED
11	Expansion ID Assignment, Second Digit
12	Expansion ID Assignment, First Digit
13	Digital Input Status LEDs
14	Expansion Connector

1.1.2 General Device Specifications

SPECIFICATION	ITEM	DESCRIPTION
Electrical	Supply (Standard)	24 VDC (12-36VDC)
	Supply (Optional)	Over Expansion Bus
	Power	<13W
	Power Protection	Yes
Enviromental Conditions	Operating Temperature	-20...+60 C
	Storage Temperature	-40...+85 C
	Humidity	5...95 RH
	Operating Altitude	0...2000 m
ID Assign	Rotary Switch	Between 0-99

1.2 CONNECTION DIAGRAMS

1.2.1 Supply Connection

Supply:	12-36 VDC, Protected
Power:	<13 W

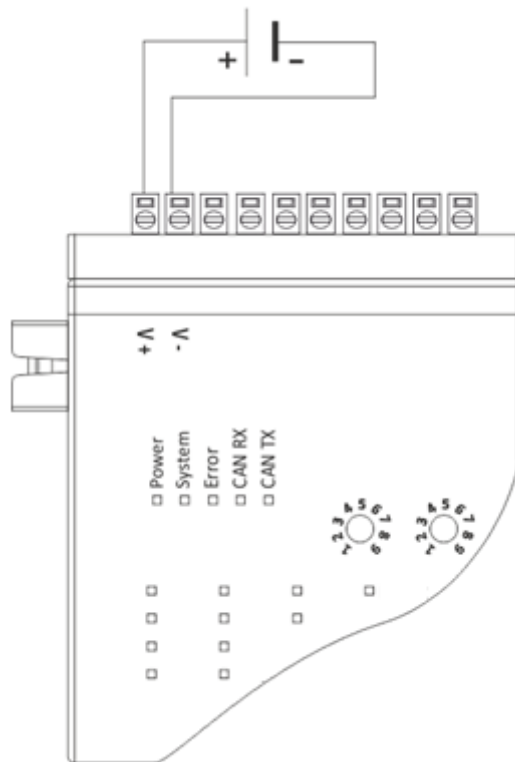


Figure 4 Digital Input Expansion Module Power Connection Diagram

1.2.2 Digital Inputs

Order Code:	XIO211-E0N-GD0-B2000
Module Input:	16 Channel, PNP
Module Input Range:	0-50 VDC
ON Voltage Range:	9-50 VDC
OFF Voltage Level:	0-5 VDC
Input Impedance:	> 2M
Isolation:	Optical
OFF to ON Response:	20 us
ON to OFF Response:	90 us

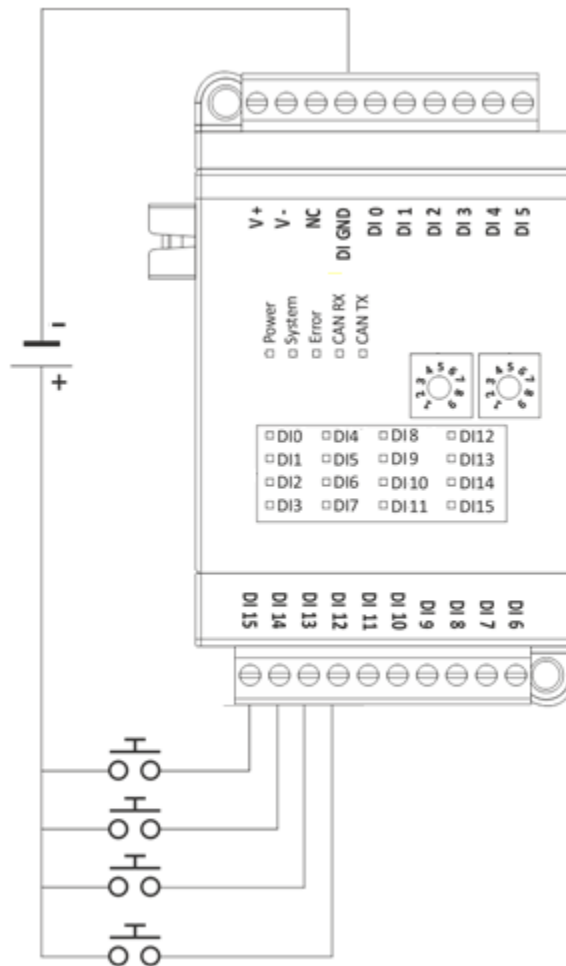


Figure 5 Digital Input Expansion Module Connection Diagram

2 XIO211 DIGITAL OUTPUT EXPANSION MODULES

2.1 GENERAL INFORMATION

2.1.1 GD7 Board Type(8 Digital Output) Physical Interfaces

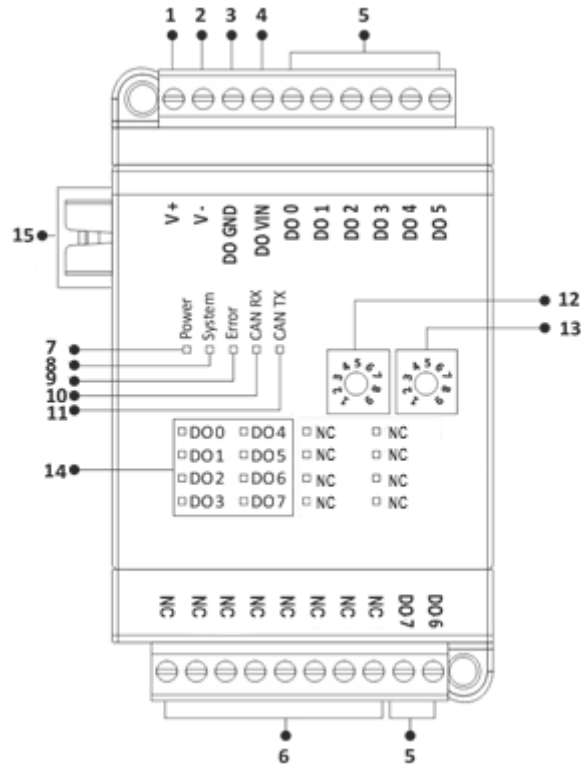


Figure 6 GD7 Board Type Connector and Physical Interfaces

1	Device Power (V+) Connection
2	Device Power (V-) Connection
3	Digital Output Ground Connection
4	Digital Output Supply Connection
5	Digital Output Connections
6	N/A
7	System Power LED
8	System Running LED
9	System Error LED
10	CANBUS Data Receiving LED
11	CANBUS Data Sending LED
12	Expansion ID Assignment, Second Digit
13	Expansion ID Assignment, First Digit
14	Digital Output Status LEDs
15	Expansion Connector

2.1.2 GD1 Board Type(16 Digital Output) Physical Interfaces

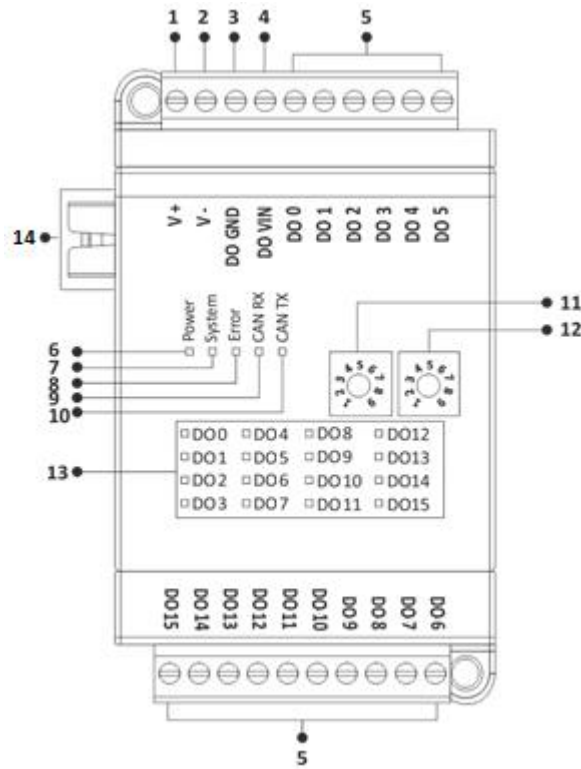


Figure 7 GD1 Board Type Connector and Physical Interfaces

1	Device Power (V+) Connection
2	Device Power (V-) Connection
3	Digital Output Ground Connection
4	Digital Output Supply Connection
5	Digital Output Connections
6	System Power LED
7	System Running LED
8	System Error LED
9	CANBUS Data Receiving LED
10	CANBUS Data Sending LED
11	Expansion ID Assignment, Second Digit
12	Expansion ID Assignment, First Digit
13	Digital Output Status LEDs
14	Expansion Connector

2.1.3 General Device Specifications

SPECIFICATION	ITEM	DESCRIPTION
Electrical	Supply (Standard)	24 VDC (12-36VDC)
	Supply (Optional)	Over Expansion Bus
	Power	<13W
	Power Protection	Yes
Enviromental Conditions	Operating Temperature	-20...+60 C
	Storage Temperature	-40...+85 C
	Humidity	5...95 RH
	Operating Altitude	0...2000 m
ID Assign	Rotary Switch	Between 0-99

2.2 CONNECTION DIAGRAMS

2.2.1 Supply Connection

Supply:	12-36 VDC, Protected
Power:	<13 W

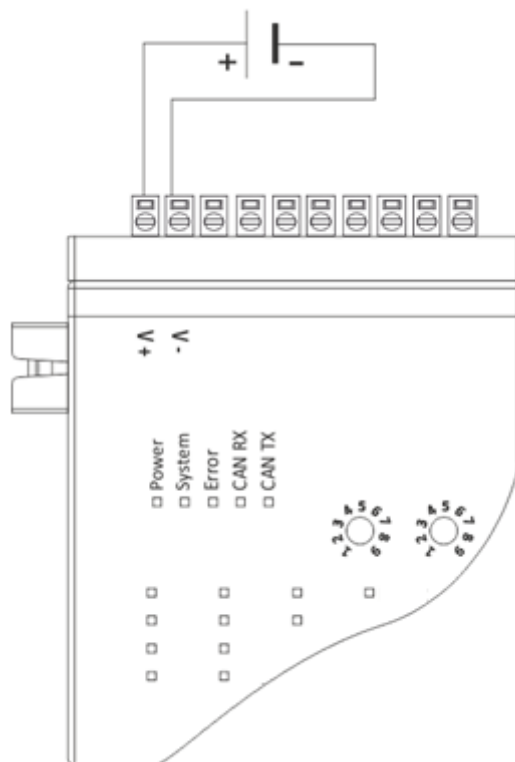


Figure 8 Digital Output Expansion Module Power Connection Diagram

2.2.2 Dijital Outputs

Order Code:	XIO211-E0N-GD7-B4000	XIO211-E0N-GD1-B4000
Module Output:	8 Channel, Mosfet Output	16 Channel, Mosfet Output
Module Output Type:	PNP Transistor	
Module Output Range:	12-36 VDC	
Module Output Current:	2 A @ 30 VDC	
Module Output GND Common:	1 GND (16 Point/ Common)	
Isolation:	Optical	

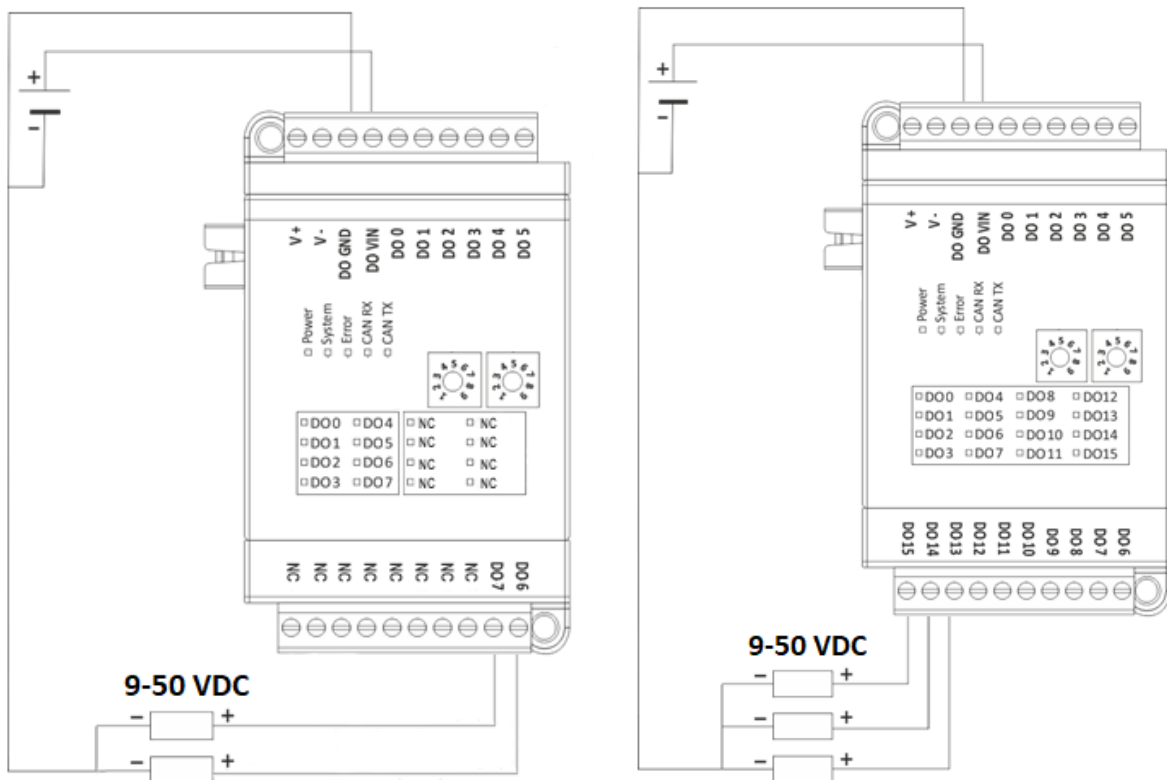


Figure 9 Digital Output Expansion Module Connection Diagram

3 XIO211 DIGITAL INPUT OUTPUT EXPANSION MODULES

3.1 GENERAL INFORMATION

3.1.1 GD8 Board Type(8 Digital Input, 8 Digital Output) Physical Interfaces

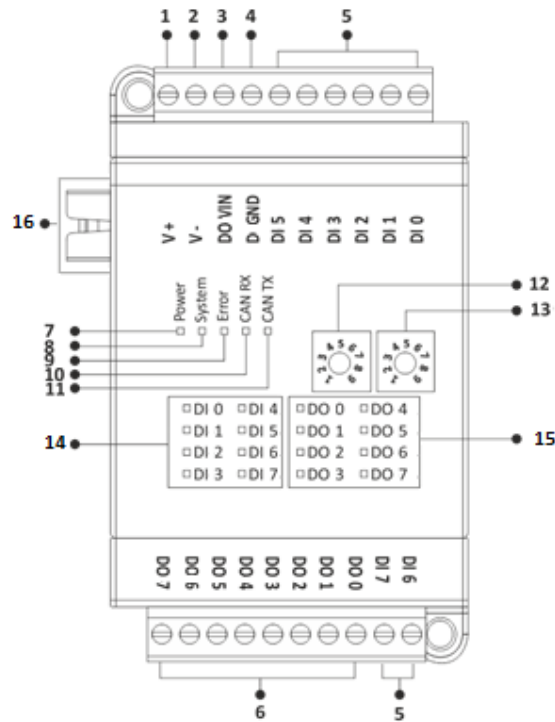


Figure 10 GD8 Board Type Connector and Physical Interfaces

1	Device Power (V+) Connection
2	Device Power (V-) Connection
3	Digital Output Supply Connection
4	Digital Input/Output Ground Connection
5	Digital Input Connections
6	Digital Output Connections
7	System Power LED
8	System Running LED
9	System Error LED
10	CANBUS Data Receiving Led
11	CANBUS Data Sending Led
12	Expansion ID Assignment, Second Digit
13	Expansion ID Assignment, First Digit
14	Digital Input Status Leds
15	Digital Output Status Leds
16	Expansion Connector

3.1.2 General Device Specifications

SPECIFICATION	ITEM	DESCRIPTION
Electrical	Supply (Standard)	24 VDC (12-36VDC)
	Supply (Optional)	Over Expansion Bus
	Power	<13W
	Power Protection	Yes
Enviromental Conditions	Operating Temperature	-20...+60 C
	Storage Temperature	-40...+85 C
	Humidity	5...95 RH
	Operating Altitude	0...2000 m
ID Assign	Rotary Switch	Between 0-99

3.2 CONNECTION DIAGRAMS

3.2.1 Supply Connection

Supply:	12-36 VDC, Protected
Power:	<13 W

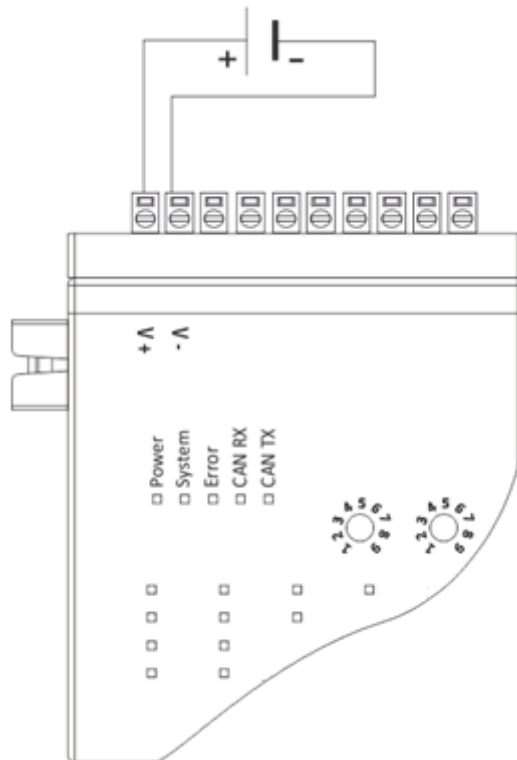


Figure 11 Digital Input Output Expansion Module Power Connection Diagram

3.2.2 Digital Input ve Outputs

Order Code:	XIO211-E0N-GD8-B6000
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Module Input:	8 Channel, PNP
Module Input Range:	0-50 VDC
ON Voltage Range:	9-50 VDC
OFF Voltage Level:	0-5 VDC
Input Impedance:	> 2M
Isolation:	Optical
OFF to ON Response:	20 us
ON to OFF Response:	90 us

Module Output	8 Channel, Mosfet Output
Module Output Type	PNP Transistor
Module Output Range	12-36 VDC
Module Output Current	2 A @ 30 VDC
Module Output GND Common	1 GND (16 Point/ Common)
Isolation	Optical

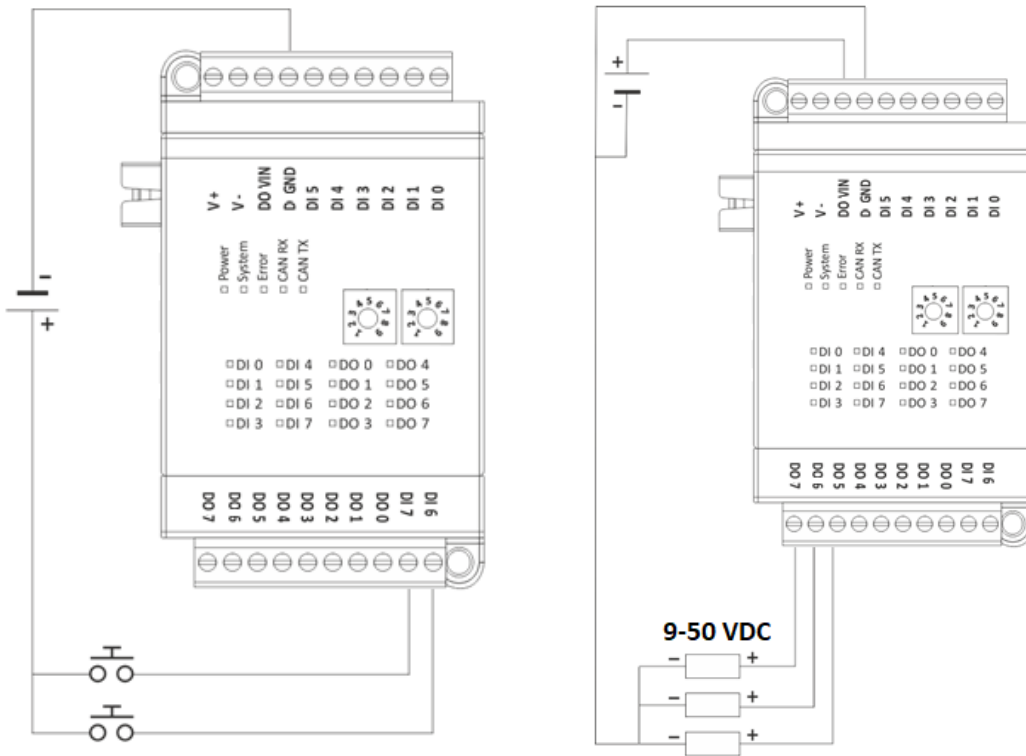


Figure 12 Digital Input Output Expansion Module Connection Diagram

4 XIO211 RELAY EXPANSION MODULES

4.1 GENERAL INFORMATION

4.1.1 GD5 Board Type(8 Relay) Physical Interfaces

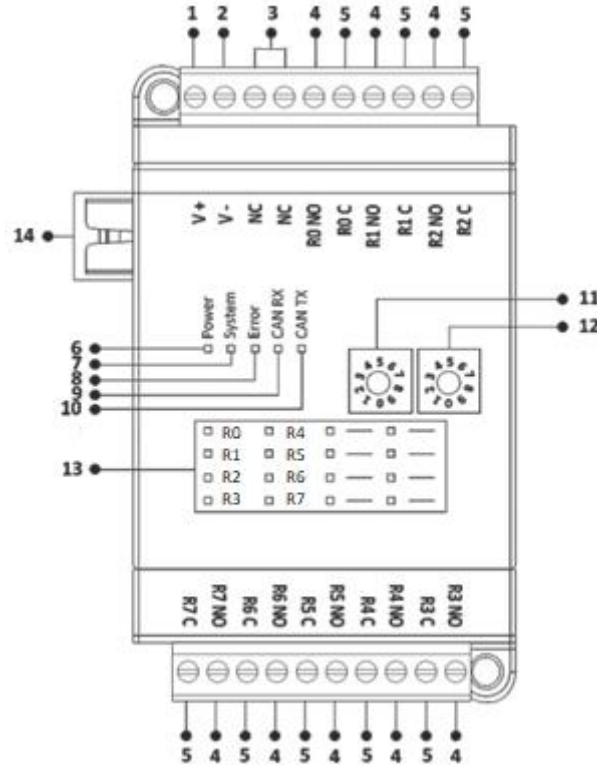


Figure 13 GD5 Board Type Connector and Physical Interfaces

1	Device Power (V+) Connection
2	Device Power (V-) Connection
3	N/A
4	Relay NO(Normally Open) Contact
5	Relay COM(Common) Contact
6	System Power LED
7	System Running LED
8	System Error LED
9	CANBUS Data Receiving Led
10	CANBUS Data Sending Led
11	Expansion ID Assignment, Second Digit
12	Expansion ID Assignment, First Digit
13	Relay Status Information LED
14	Expansion Connector

4.1.2 General Device Specifications

SPECIFICATION	ITEM	DESCRIPTION
Electrical	Supply (Standard)	24 VDC (12-36VDC)
	Supply (Optional)	Over Expansion Bus
	Power	<13W
	Power Protection	Yes
Enviromental Conditions	Operating Temperature	-20...+60 C
	Storage Temperature	-40...+85 C
	Humidity	5...95 RH
	Operating Altitude	0...2000 m
ID Assign	Rotary Switch	Between 0-99

4.2 CONNECTION DIAGRAMS

4.2.1 Supply Connection

Supply:	12-36 VDC, Protected
Power:	<13 W

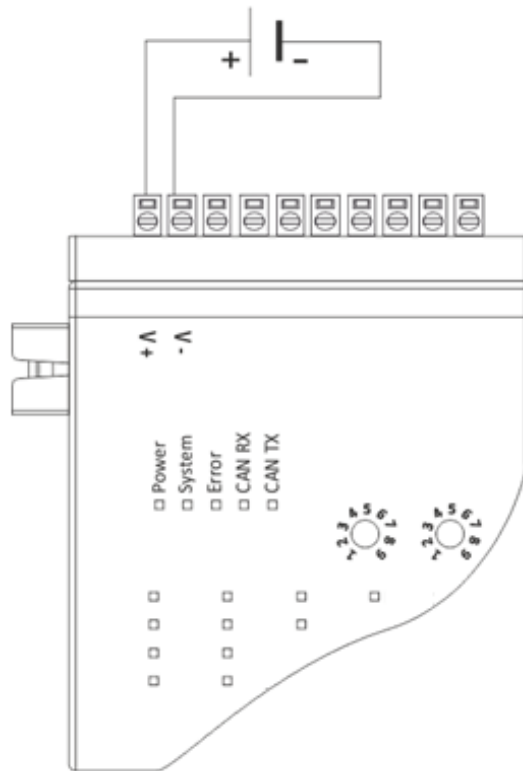


Figure 14 Relay Expansion Module Power Connection Diagram

4.2.2 Relay Outputs

Order Code:	XIO211-E0N-GD5-B0000
Relay Output:	8 Channel
Relay Contact Output:	COM-NO (Normally Open)
Relay Contact Max. Current Value:	5A@250V AC – 3A@30V DC
Isolation:	Dry Contact

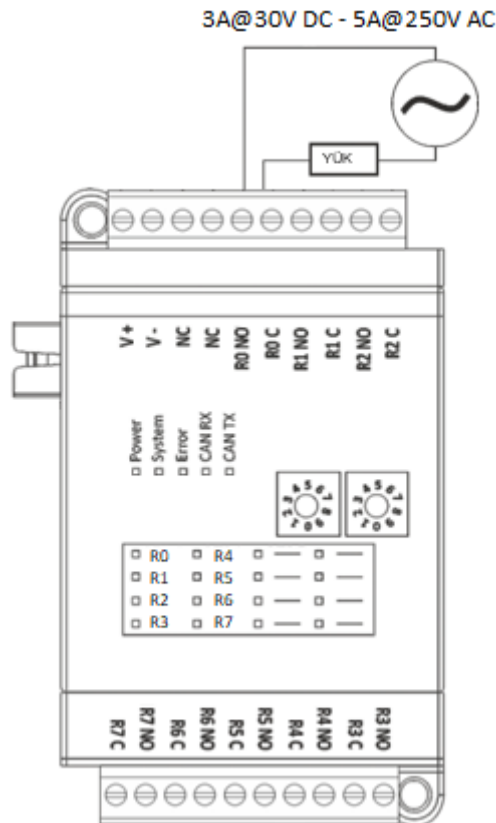


Figure 15 Relay Expansion Module Connection Diagram

5 XIO211 ANALOG INPUT EXPANSION MODULES

5.1 GENERAL INFORMATION

5.1.1 GD2 Board Type(8 Analog Input) Physical Interfaces

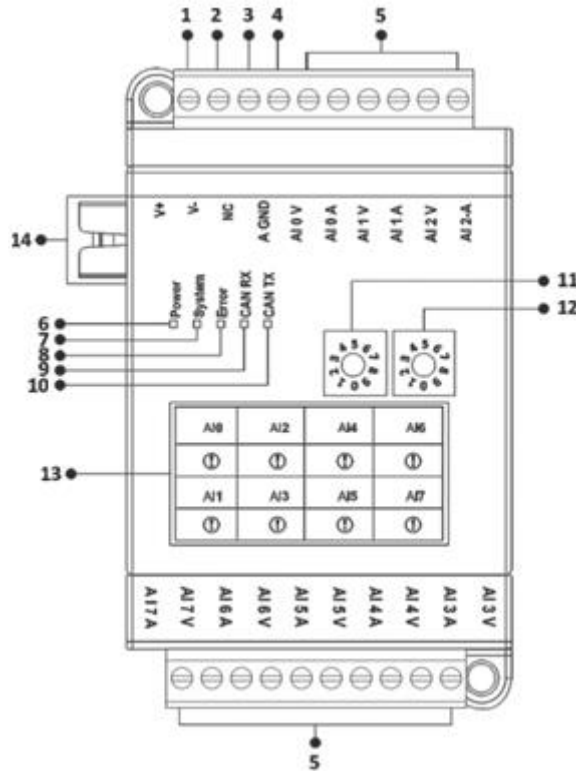


Figure 16 GD2 Board Type Connector and Physical Interfaces

1	Device Power (V+) Connection
2	Device Power (V-) Connection
3	N/A
4	Analog Input Ground Connection
5	Analog Input Connections
6	System Power LED
7	System Running LED
8	System Error LED
9	CANBUS Data Receiving Led
10	CANBUS Data Sending Led
11	Expansion ID Assignment, Second Digit
12	Expansion ID Assignment, First Digit
13	Analog Input Status Leds
14	Expansion Connector

5.1.2 General Device Specifications

SPECIFICATION	ITEM	DESCRIPTION
Electrical	Supply (Standard)	24 VDC (12-36VDC)
	Supply (Optional)	Over Expansion Bus
	Power	<13W
	Power Protection	Yes
Enviromental Conditions	Operating Temperature	-20...+60 C
	Storage Temperature	-40...+85 C
	Humidity	5...95 RH
	Operating Altitude	0...2000 m
ID Assign	Rotary Switch	Between 0-99

5.2 CONNECTION DIAGRAMS

5.2.1 Supply Connection

Supply:	12-36 VDC, Protected
Power:	<13 W

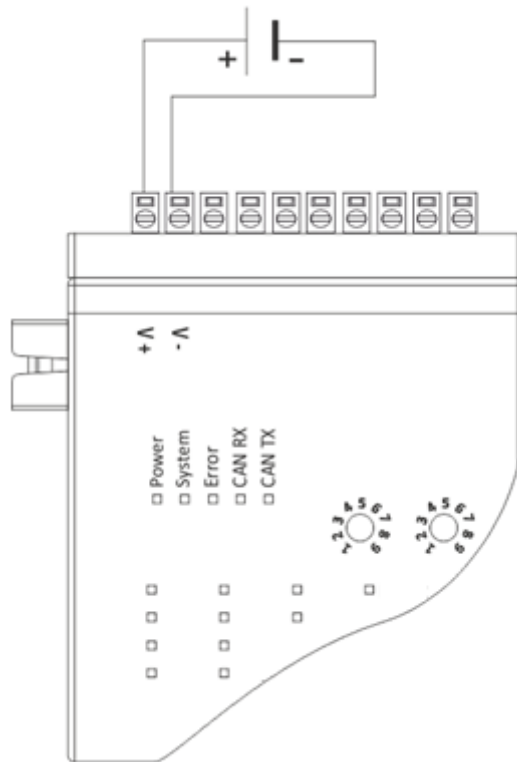


Figure 17 Analog Input Expansion Module Power Connection Diagram

5.2.2 Analog Inputs

Order Code:	XIO211-E0N-GD2-B0401
Module Input Type:	Current or Voltage
Analog Input:	8 Channel
Resolution:	16 Bit
Analog Input Accuracy:	%1 Accuracy
Current Input Range:	0-20 mA, 4-20 mA
Voltage Input Range:	0-10 V
Analog Input GND Common:	1 GND (8 Point / Common)
Isolation:	Optical Isolation Expansion Bus

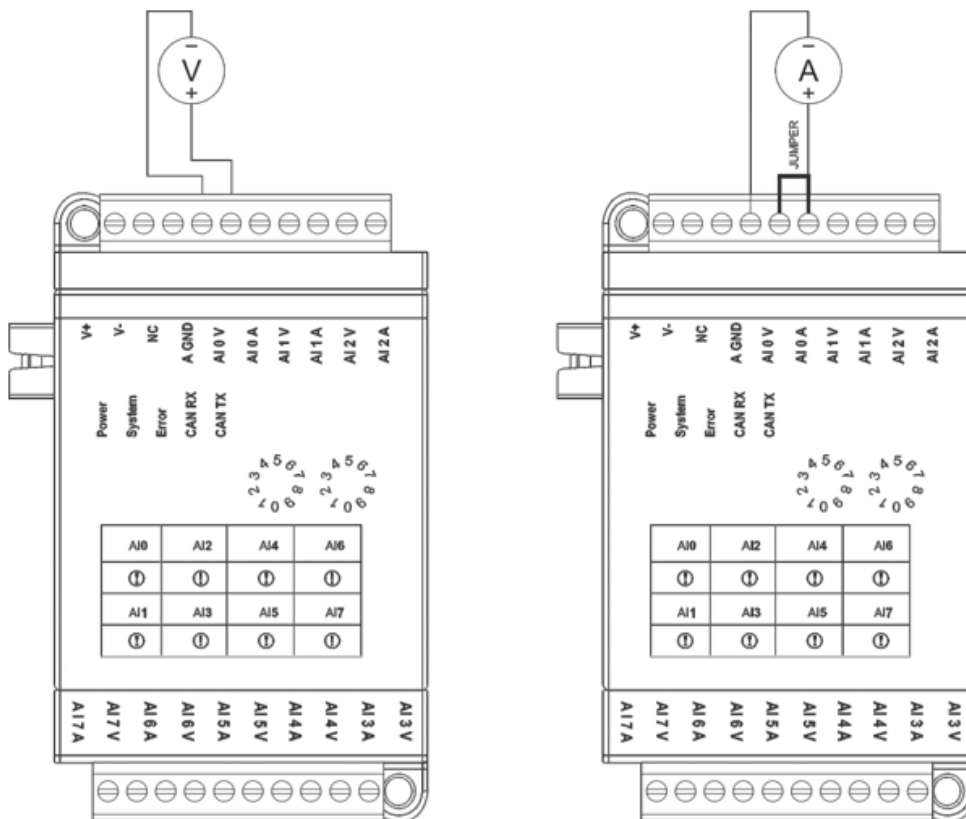


Figure 18 Analog Input Expansion Module Connection Diagram

6 XIO211 ANALOG OUTPUT EXPANSION MODULES

6.1 GENERAL INFORMATION

6.1.1 GD3 Board Type(8 Analog Output) Physical Interfaces

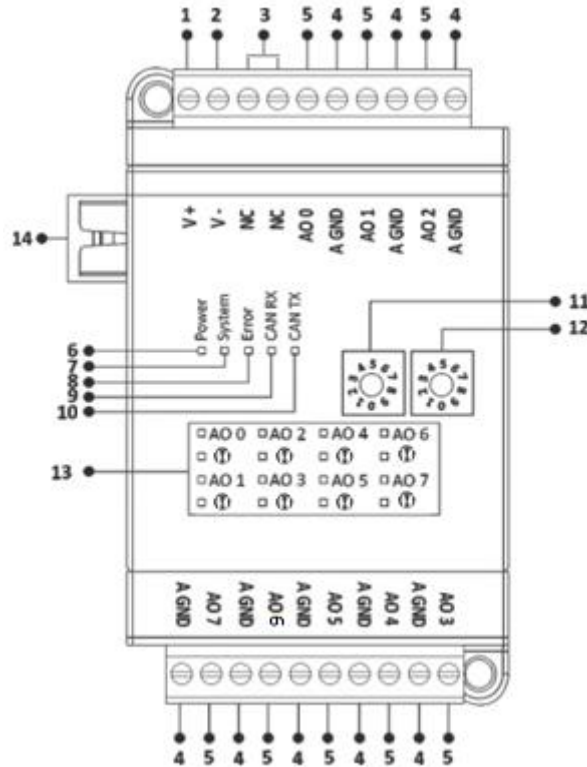


Figure 19 GD3 Board Type Connector and Physical Interfaces

1	Device Power (V+) Connection
2	Device Power (V-) Connection
3	N/A
4	Analog Output Ground Connection
5	Analog Output Connections
6	System Power LED
7	System Running LED
8	System Error LED
9	CANBUS Data Receiving Led
10	CANBUS Data Sending Led
11	Expansion ID Assignment, Second Digit
12	Expansion ID Assignment, First Digit
13	Analog Output Status Leds
14	Expansion Connector

6.1.2 General Device Specifications

SPECIFICATION	ITEM	DESCRIPTION
Electrical	Supply (Standard)	24 VDC (12-36VDC)
	Supply (Optional)	Over Expansion Bus
	Power	<13W
	Power Protection	Yes
Enviromental Conditions	Operating Temperature	-20...+60 C
	Storage Temperature	-40...+85 C
	Humidity	5...95 RH
	Operating Altitude	0...2000 m
ID Assign	Rotary Switch	Between 0-99

6.2 CONNECTION DIAGRAMS

6.2.1 Supply Connection

Supply:	12-36 VDC, Protected
Power:	<13 W

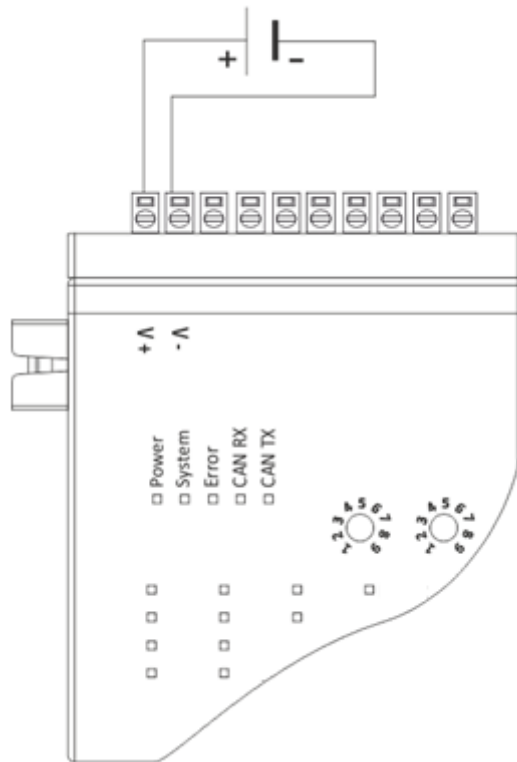


Figure 20 Analog Output Expansion Module Power Connection Diagram

6.2.2 Analog Outputs

Order Code:	XIO211-E0N-GD3-B0000	XIO211-E0N-GD3-B0800
Module Output Type:	Current	Voltage
Analog Output:	8 Channel	
Resolution:	12 Bit	
Analog Output Accuracy:	%1 Accuracy	
Current Output Range:	0-20 mA, 4-20 mA	
Voltage Output Range:	0-10 V	
Analog Output GND Common:	8 GND (8 Point / Common)	
Isolation:	Optical Isolation Expansion Bus	

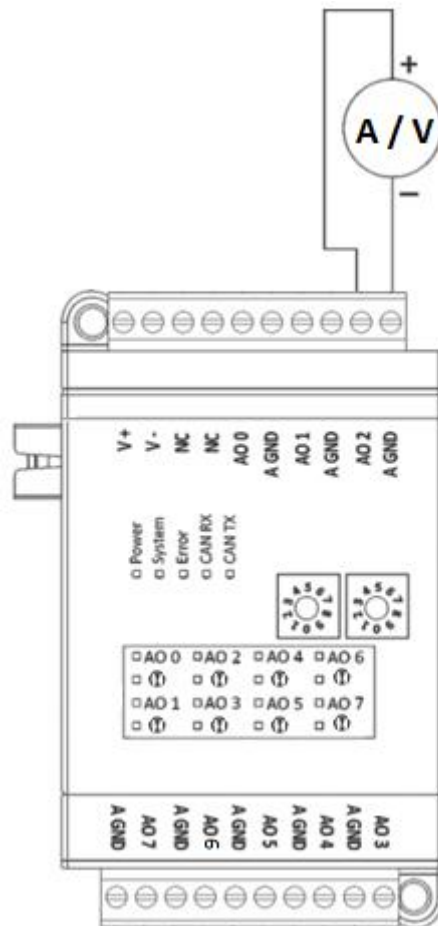


Figure 21 Analog Output Expansion Module Connection Diagram

7 XIO211 ANALOG INPUT OUTPUT EXPANSION MODULES

7.1 GENERAL INFORMATION

7.1.1 GD9 Board Type(4 Analog Input, 4 Analog Output) Physical Interfaces

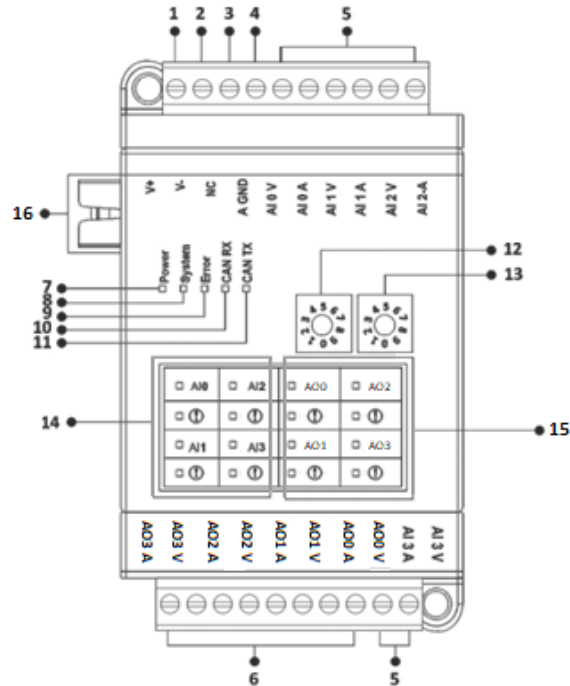


Figure 22 GD9 Board Type Connector and Physical Interfaces

1	Device Power (V+) Connection
2	Device Power (V-) Connection
3	N/A
4	Analog Input Output Ground Connection
5	Analog Input Connections
6	Analog Output Connections
7	System Power LED
8	System Running LED
9	System Error LED
10	CANBUS Data Receiving Led
11	CANBUS Data Sending Led
12	Expansion ID Assignment, Second Digit
13	Expansion ID Assignment, First Digit
14	Analog Input Status Leds
15	Analog Output Status Leds
16	Expansion Connector

7.1.2 General Device Specification

SPECIFICATION	ITEM	DESCRIPTION
Electrical	Supply (Standard)	24 VDC (12-36VDC)
	Supply (Optional)	Over Expansion Bus
	Power	<13W
	Power Protection	Yes
Environmental Conditions	Operating Temperature	-20...+60 C
	Storage Temperature	-40...+85 C
	Humidity	5...95 RH
	Operating Altitude	0...2000 m
ID Assign	Rotary Switch	Between 0-99

7.2 CONNECTION DIAGRAMS

7.2.1 Supply Connection

Supply:	12-36 VDC, Protected
Power:	<13 W

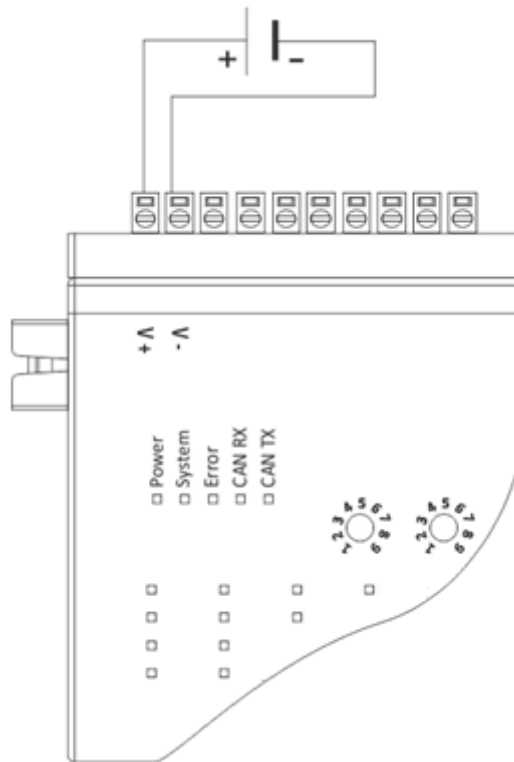


Figure 23 Analog Input Output Expansion Module Power Connection Diagram

7.2.2 Analog Input and Outputs

Order Code:	XIO211-E0N-GD9-B0000	XIO211-E0N-GD9-B0900
Analog Input/Output Type:	Current	Voltage

Analog Input:	4 Channel
Resolution:	12 Bit
Analog Input Accuracy:	%1 Accuracy
Current Input Range:	0-20 mA, 4-20 mA
Voltage Input Range:	0-10 V
Analog Input GND Common:	1 GND (4 Point / Common)
Isolation:	Optical Isolation Expansion Bus

Analog Output:	4 Channel
Resolution:	12 Bit
Analog Output Accuracy:	%1 Accuracy
Current Output Range:	0-20 mA, 4-20 mA
Voltage Output Range:	0-10 V
Analog Output GND Common:	1 GND (4 Point / Common)
Isolation:	Optical Isolation Expansion Bus

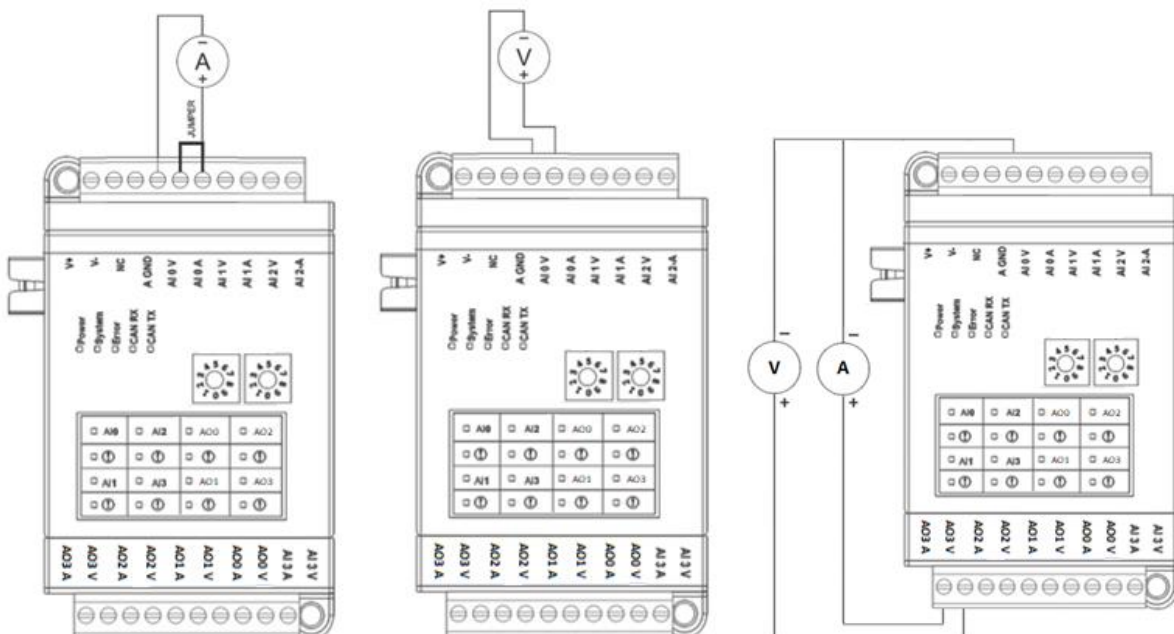


Figure 24 Analog Input Output Expansion Module Connection Diagram

8 XIO211 RTD INPUT (PT1000) EXPANSION MODULES

8.1 GENERAL INFORMATION

8.1.1 GD4 Board Type(6 RTD Input) Physical Interfaces

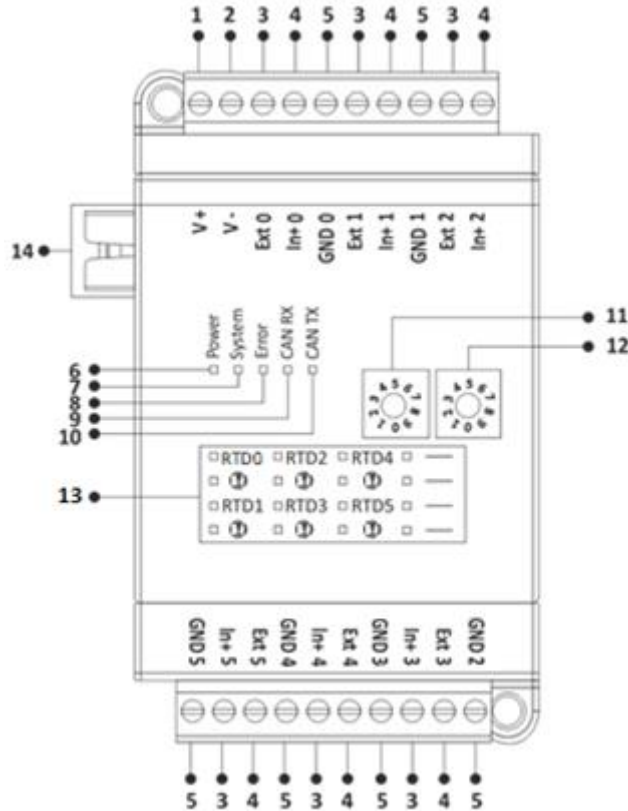


Figure 25 GD4 Board Type Connector and Physical Interfaces

1	Device Power (V+) Connection
2	Device Power (V-) Connection
3	RTD Excitation Current Output (2-wire connection, jumper is thrown between signal inputs)
4	RTD Input Connections
5	RTD Input Ground Connections
6	System Power LED
7	System Running LED
8	System Error LED
9	CANBUS Data Receiving Led
10	CANBUS Data Sending Led
11	Expansion ID Assignment, Second Digit
12	Expansion ID Assignment, First Digit
13	RTD Input Status Leds
14	Expansion Connector

8.1.2 General Device Specifications

SPECIFICATION	ITEM	DESCRIPTION
Electrical	Supply (Standard)	24 VDC (12-36VDC)
	Supply (Optional)	Over Expansion Bus
	Power	<13W
	Power Protection	Yes
Enviromental Conditions	Operating Temperature	-20...+60 C
	Storage Temperature	-40...+85 C
	Humidity	5...95 RH
	Operating Altitude	0...2000 m
ID Assign	Rotary Switch	Between 0-99

8.2 CONNECTION DIAGRAMS

8.2.1 Supply Connection

Supply:	12-36 VDC, Protected
Power:	<13 W

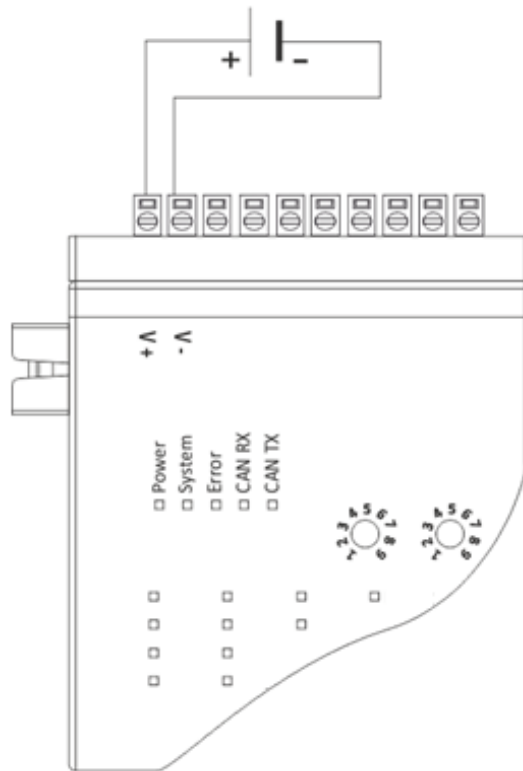


Figure 26 RTD Input Expansion Module Power Connection Diagram

8.2.2 RTD Inputs

Order Code:	XIO211-E0N-GD4-B0000	XIO211-E0N-GD4-B0010
RTD Input Type:	PT1000	PT100
RTD Input:	6 Channel	
RTD Input Resolution:	12 Bit	
RTD Input Accuracy:	%1 Accuracy	
RTD Input GND Connection:	6 GND (6 Point / Common)	
Temperature Range:	-200...400 C	

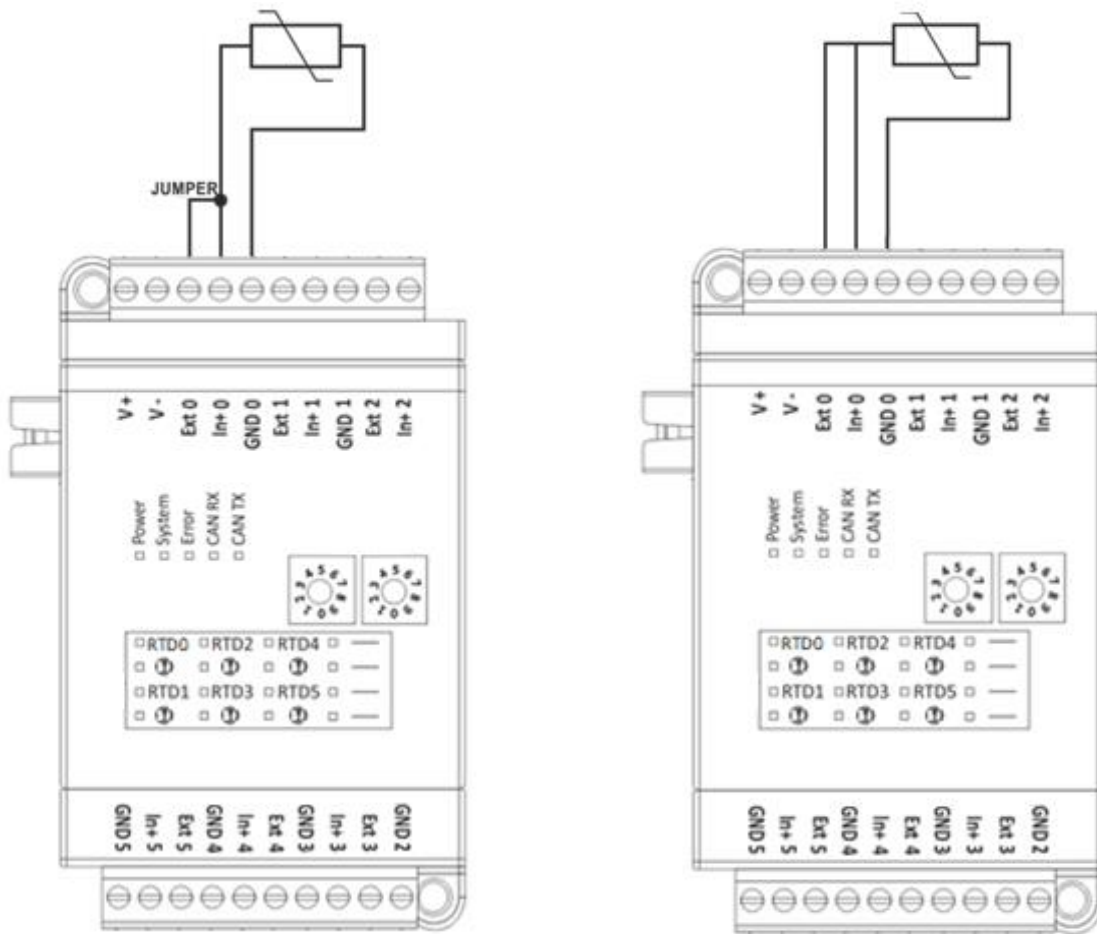


Figure 27 RTD Input Expansion Module Connection Diagram

9 XIO211 END MODULE

9.1 GENERAL INFORMATION

9.1.1 GDY Board Type Physical Interfaces



Figure 28 GDY Board Type Connector and Physical Interfaces

1	Canbus H Connection
2	Canbus L Connection
3	Expansion Connector

9.1.2 General Device Specifications

It is used to complete the communication line between expansion modules located on two different rails on the panel.

SPECIFICATION	ITEM	DESCRIPTION
Electrical	Supply:	The termination module does not require an external power supply.
	Max Cable Length to be Used Between Two End Modules:	2 m
	Type of Cable to be Used Between Two End Modules:	Shielded twisted pair (STP)

9.2 CONNECTION DIAGRAM

9.2.1 Supply Connection

As seen in Figure 29 and Figure 30, CANBUS connections can be established.

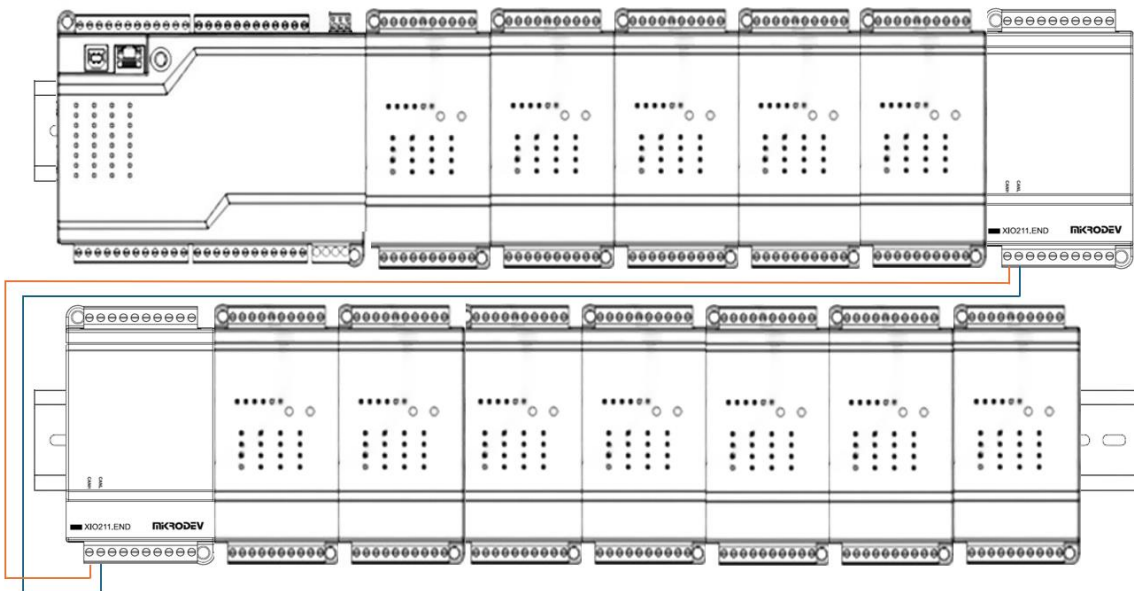


Figure 29 End Module Canbus Connection Diagram 1

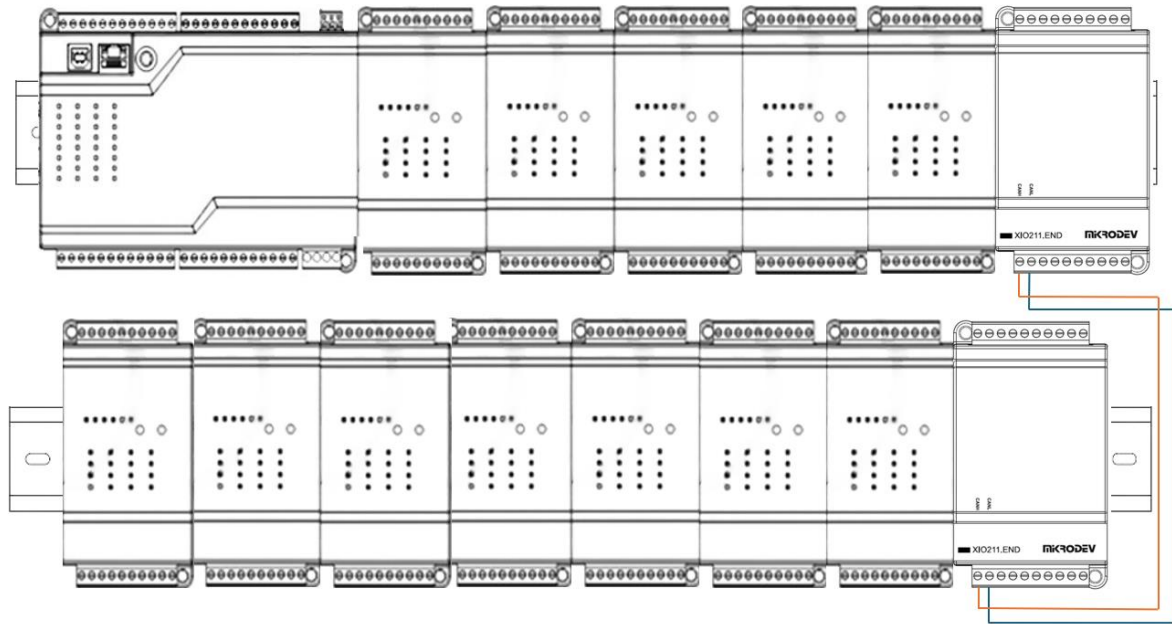


Figure 30 End Module Canbus Connection Diagram 2