

## **XIO211 EXPANSION FAMILY HARDWARE MANUAL**

- XIO211.DI16
- XIO211.DO16
- XIO211.DI8DO8
- XIO211.AI8
- XIO211.AO8
- XIO211.AI4AO4
- XIO211.P6
- XIO211.R8

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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 8 different types of XIO211 expansion modules:

- XIO211.DI16: 16 DIGITAL INPUT
- XIO211.DO16: 16 DIGITAL OUTPUT
- XIO211.DI8DO8: 8 DIGITAL INPUT, 8 DIGITAL OUTPUT
- XIO211.AI8: 8 ANALOG INPUT
- XIO211.AO8: 8 ANALOG OUTPUT
- XIO211.P6: 6 RTD INPUT (PT100/PT1000)
- XIO211.R8: 8 RELAY OUTPUT

This document describes the hardware features of XIO211 series devices.

Please follow our website [www.mikrodev.com](http://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!

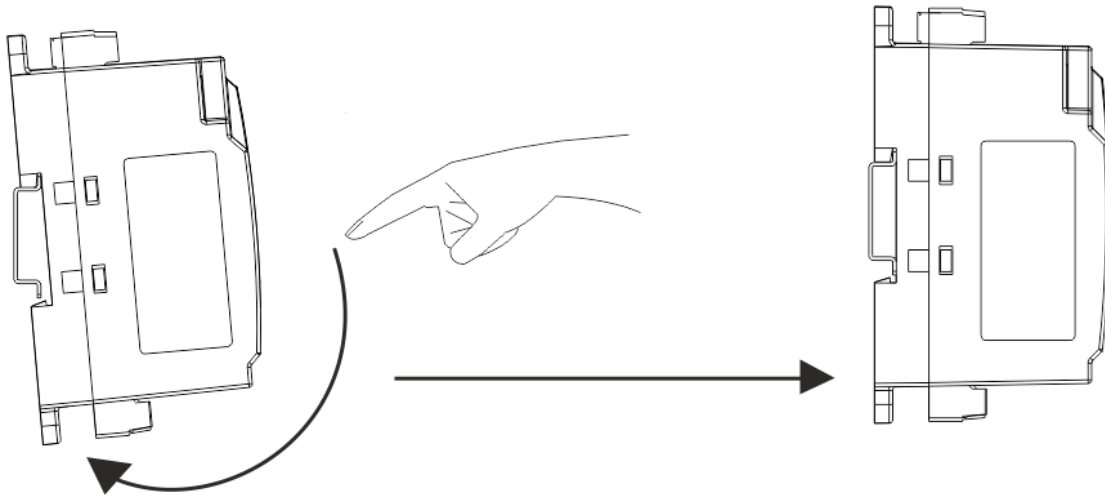
- ✓ Please take care of the following issues when using Mikrodev devices.
- ✓ Since the unit operates with 24 VDC (12-36 VDC) voltage, you should take care of the voltage level that the unit is connected to. If a voltage above this voltage level is applied, the device may be damaged and may be out of 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

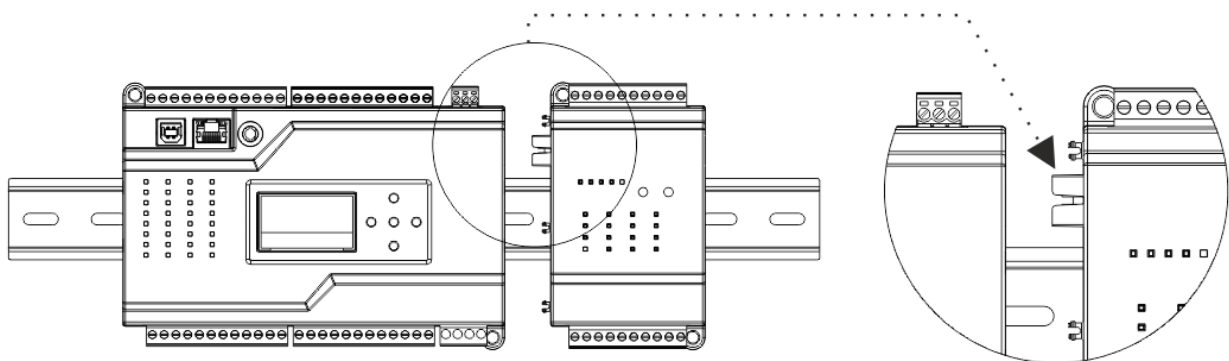
First, the upper part of the device is mounted on the DIN rail. Then, with the help of the springs behind the device, when a lightly force is applied to the lower part, the device locates into the DIN rail easily and the montage is completed (See Figure 1).



**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.



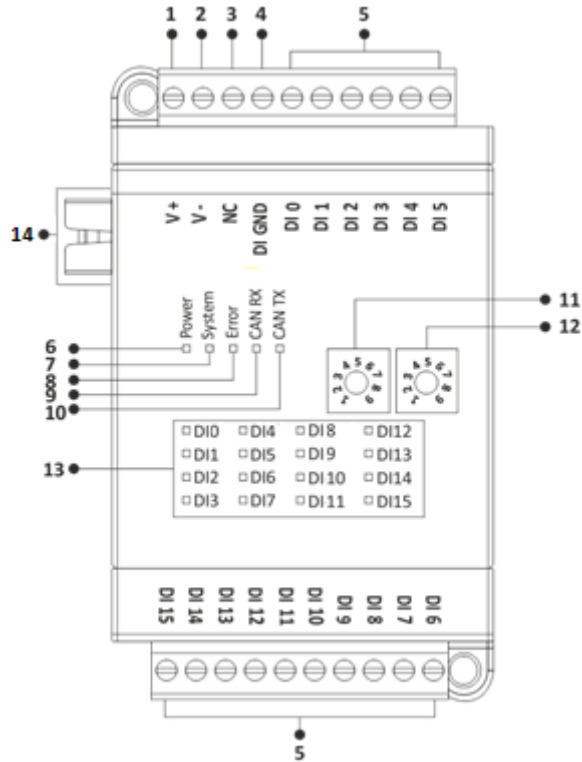
**Figure 2** Expansion Module Mounting



# 1 XIO211.DI16 DIGITAL INPUT

## 1.1 XIO211.DI16 GENERAL INFORMATION

### 1.1.1 Physical Interfaces



**Figure 3 XIO211.DI16 Connector and Physical Interfaces**

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

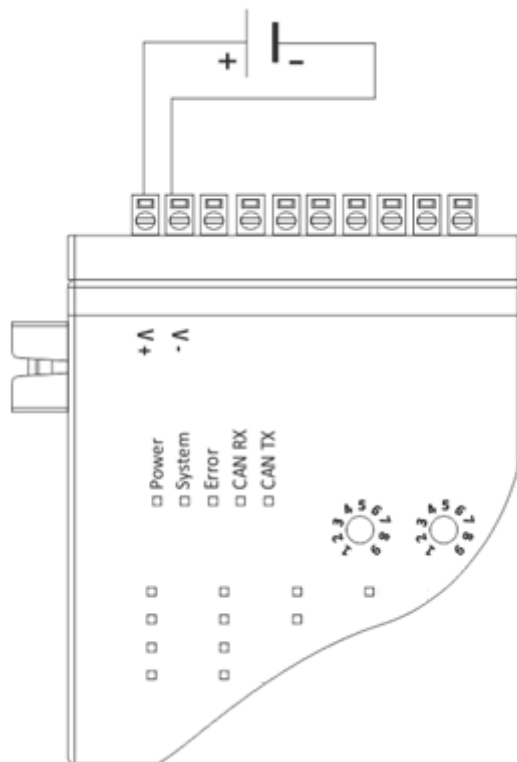
### 1.1.2 General Device Specifications

SPECIFICATION	ITEM	DESCRIPTION
Electrical	Supply (Standard)	24 VDC (12-36VDC)
	Supply (Optional)	Over Expansion Bus
	Power	<13W
	Power Protection	Yes
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

## 1.2 CONNECTION DIAGRAMS

### 1.2.1 Supply Connection

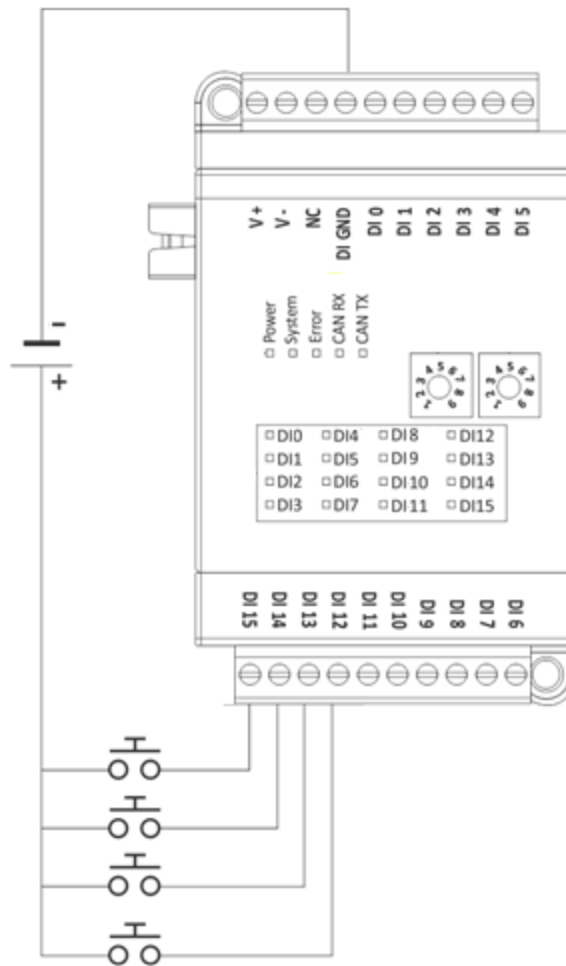
Supply:	12-36 VDC, Protected
Power:	<13 W



**Figure 4 XIO211.DI16 Power Connection Diagram**

### 1.2.2 Digital Inputs

Module Input:	16 Channel
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

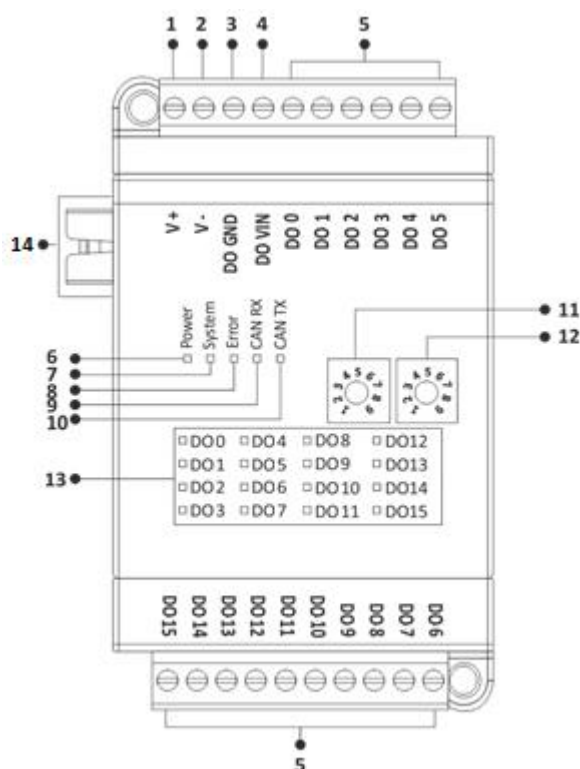


**Figure 5 XIO211.DI16 Connection Diagram**

## 2 XIO211.DO16 DIGITAL OUTPUT

### 2.1 XIO211.DO16 GENERAL INFORMATION

#### 2.1.1 Physical Interfaces



**Figure 6 XIO211.DO16 Connector and Physical Interfaces**

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

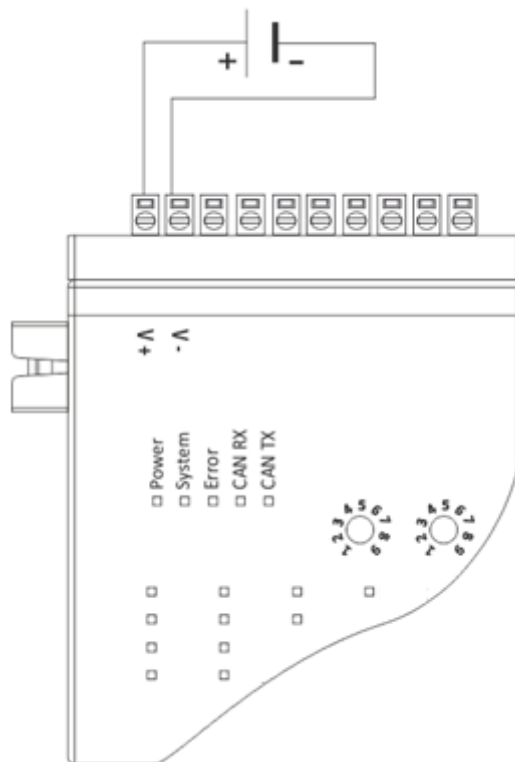
## 2.1.2 General Device Specifications

SPECIFICATION	ITEM	DESCRIPTION
Electrical	Supply (Standard)	24 VDC (12-36VDC)
	Supply (Optional)	Over Expansion Bus
	Power	<13W
	Power Protection	Yes
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

## 2.2 CONNECTION DIAGRAMS

### 2.2.1 Supply Connection

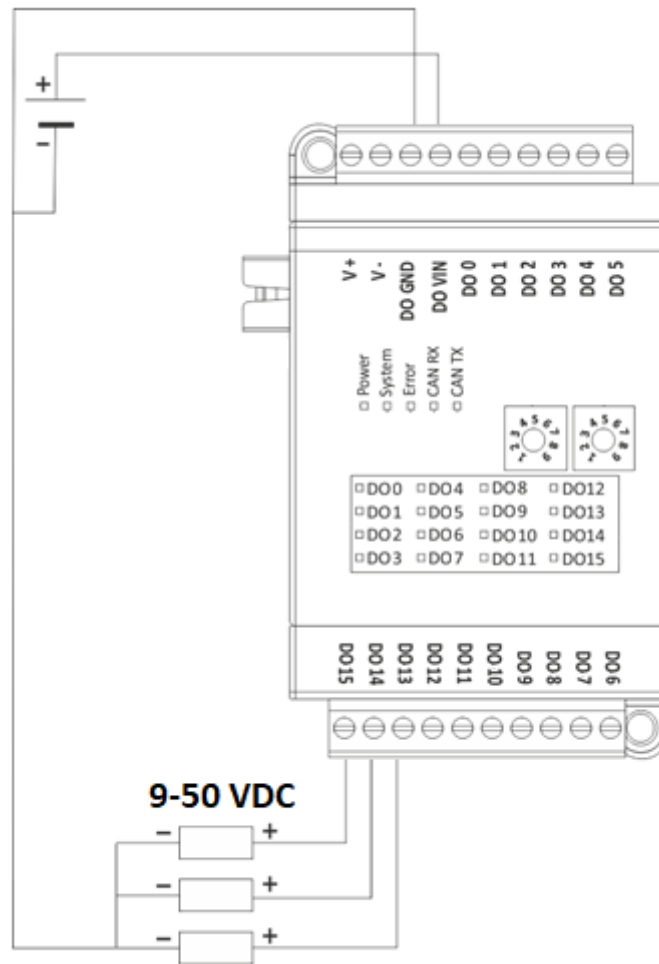
Supply:	12-36 VDC, Protected
Power:	<13 W



**Figure 7 XIO211.DO16 Power Connection Diagram**

## 2.2.2 Dijital Outputs

Module 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

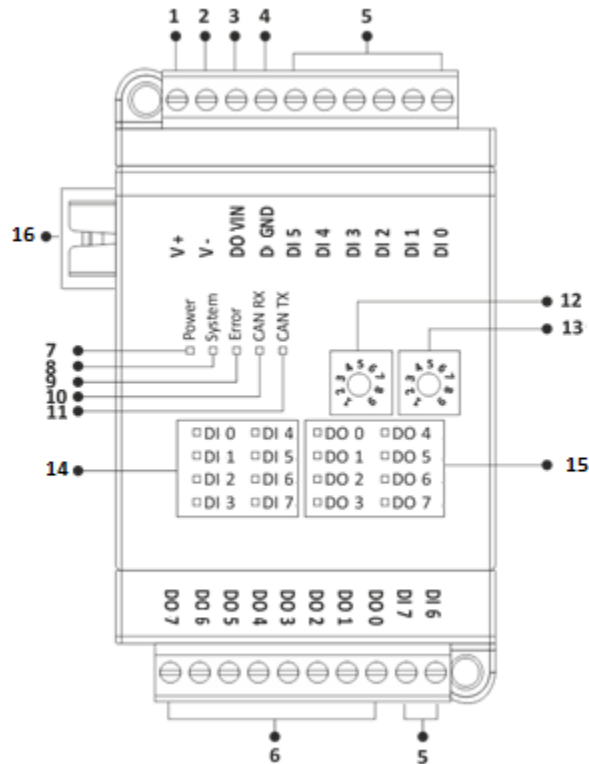


**Figure 8 XIO211.D016 Connection Diagram**

### 3 XIO211.DI8DO8 DIGITAL INPUT OUTPUT

#### 3.1 XIO211.DI8DO8 GENERAL INFORMATION

##### 3.1.1 Physical Interfaces



**Figure 9 XIO211.DI8DO8 Connector and Physical Interfaces**

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

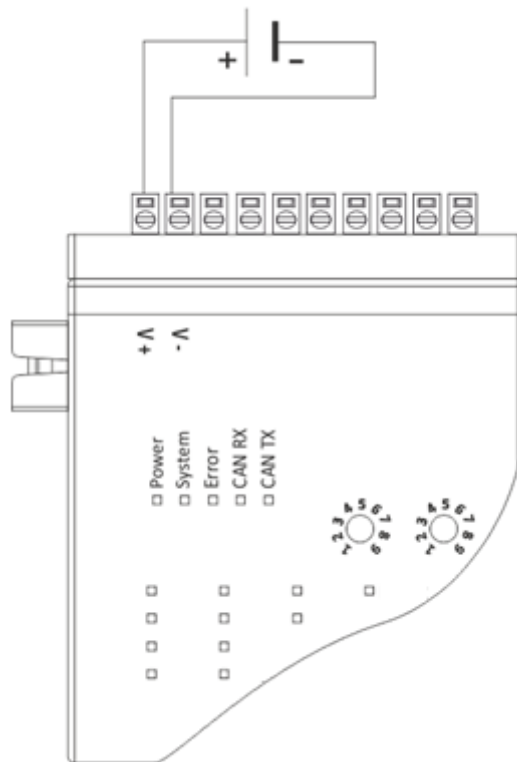


Figure 10 XIO211.DI8DO8 Power Connection Diagram



### 3.2.2 Digital Input ve Outputs

Module Input:	16 Channel
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	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

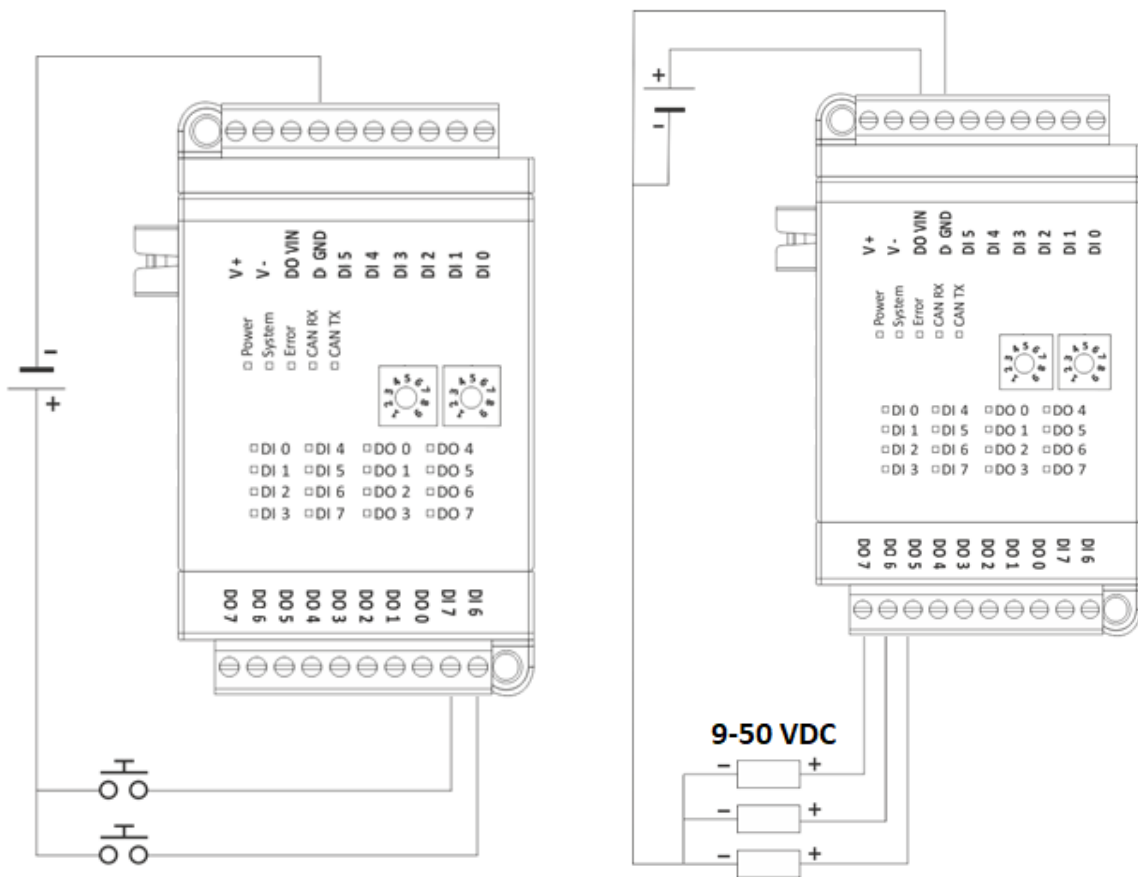
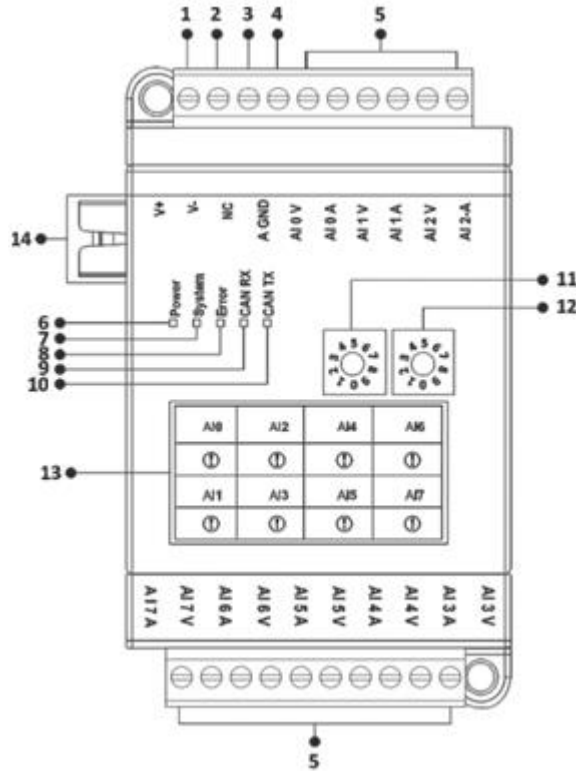


Figure 11 XIO211.DI8DO8 Connection Diagram

## 4 XIO211.AI8 ANALOG INPUT

### 4.1 XIO211.AI8 GENERAL INFORMATION

#### 4.1.1 Physical Interfaces



**Figure 12 XIO211.AI8 Connector and Physical Interfaces**

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

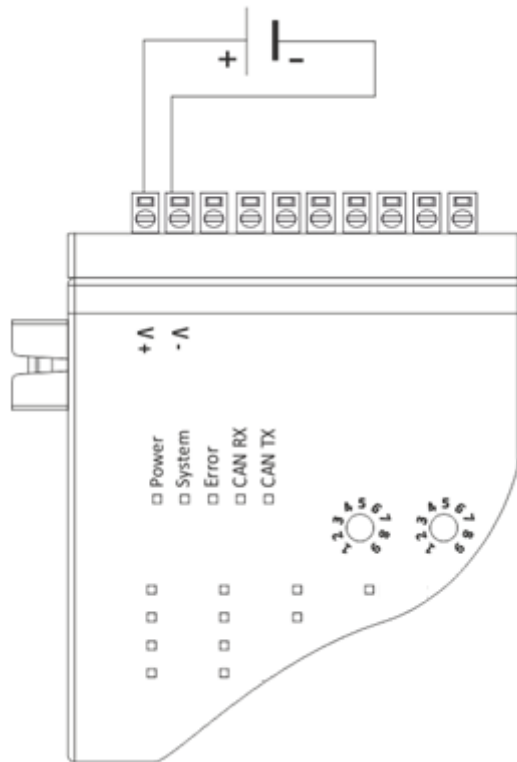
### 4.1.2 General Device Specifications

SPECIFICATION	ITEM	DESCRIPTION
Electrical	Supply (Standard)	24 VDC (12-36VDC)
	Supply (Optional)	Over Expansion Bus
	Power	<13W
	Power Protection	Yes
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

## 4.2 CONNECTION DIAGRAMS

### 4.2.1 Supply Connection

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



**Figure 13 XIO211.AI8 Power Connection Diagram**

### 4.2.2 Analog Inputs

Analog Input:	8 Channel
Module Input Type:	Current or Voltage
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 (8 Point / Common)
Isolation:	Optical Isolation Expansion Bus

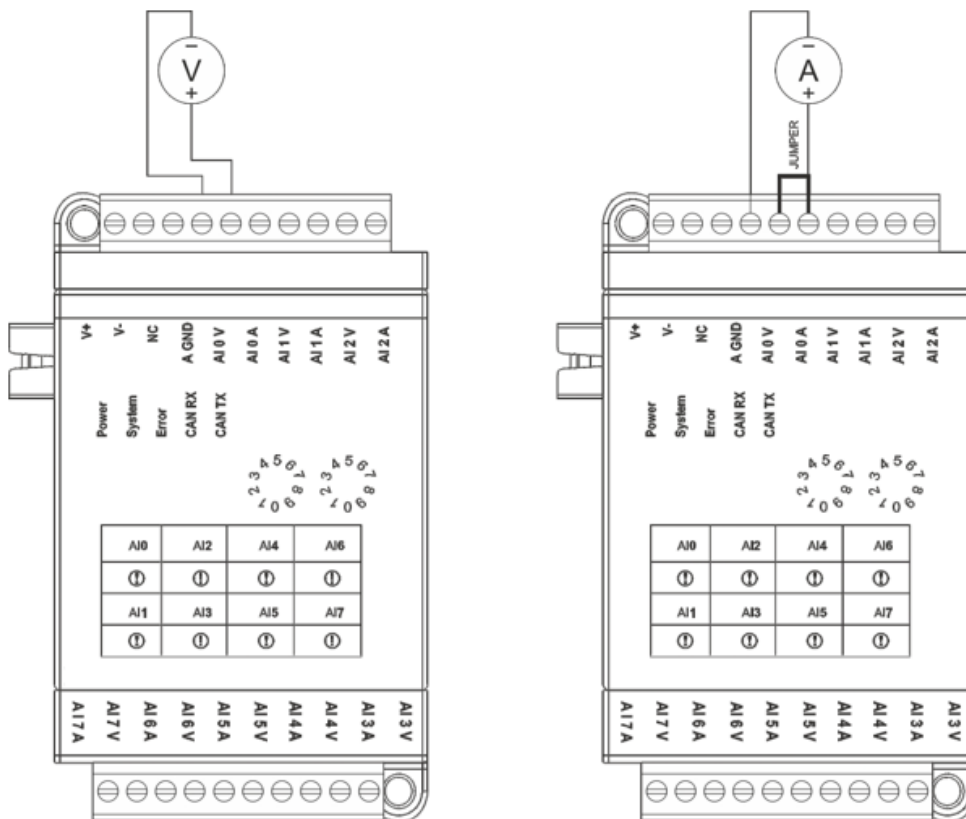
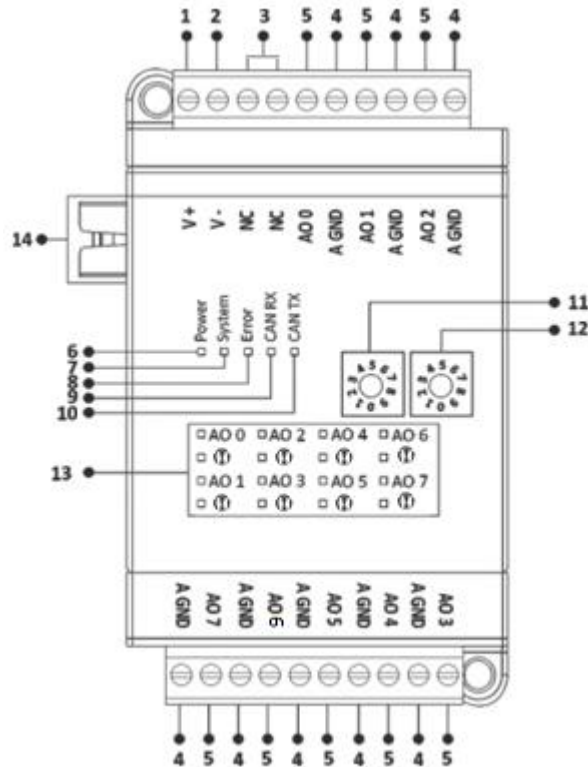


Figure 14 XIO211.AI8 Connection Diagram

## 5 XIO211.A08 ANALOG OUTPUT

### 5.1 XIO211.A08 GENERAL INFORMATION

#### 5.1.1 Physical Interfaces



**Figure 15 XIO211.A08 Connector and Physical Interfaces**

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

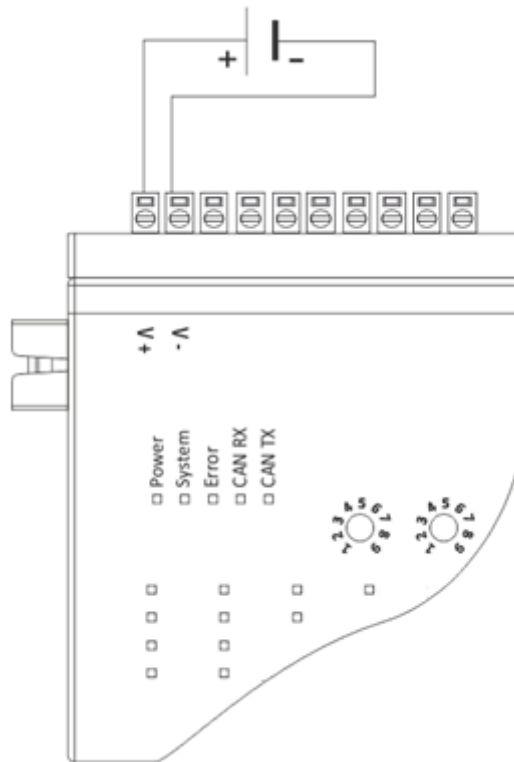
### 5.1.2 General Device Specifications

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

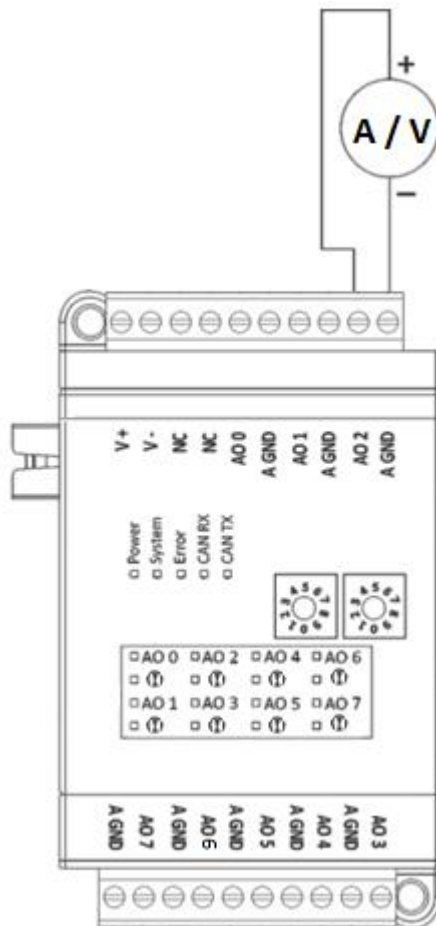
Supply:	12-36 VDC, Protected
Power:	<13 W



**Figure 16 XIO211.A08 Power Connection Diagram**

### 5.2.2 Analog Outputs

Analog Output:	8 Channel
Module Output Type:	Current or Voltage
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

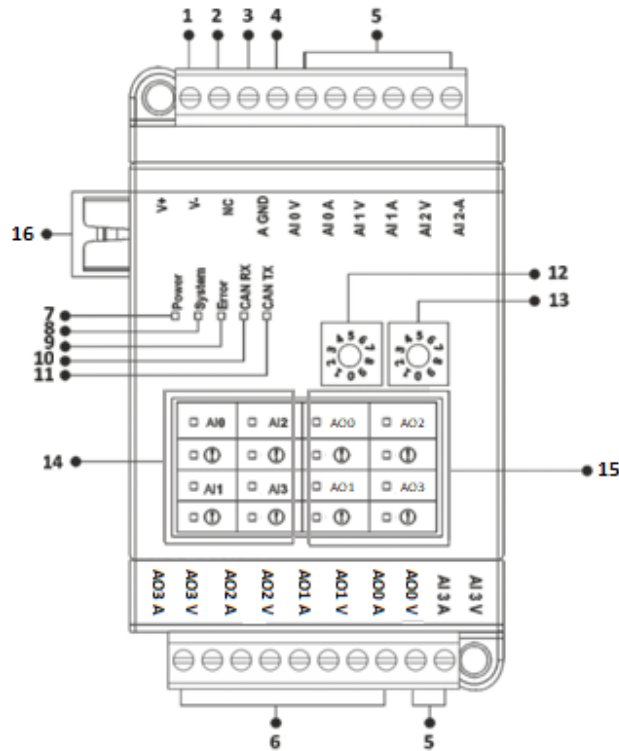


**Figure 17 XIO211.AO8 Connection Diagram**

## 6 XIO211.AI4AO4 ANALOG INPUT OUTPUT

### 6.1 XIO211.AI4AO4 GENERAL INFORMATION

#### 6.1.1 Physical Interfaces



**Figure 18 XIO211.AI4AO4 Connector and Physical Interfaces**

1	Device Power (V+) Connection
2	Device Power (V-) Connection
3	Empty
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



### 6.1.2 General Device Specification

SPECIFICATION	ITEM	DESCRIPTION
Electrical	Supply (Standard)	24 VDC (12-36VDC)
	Supply (Optional)	Over Expansion Bus
	Power	<13W
	Power Protection	Yes
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

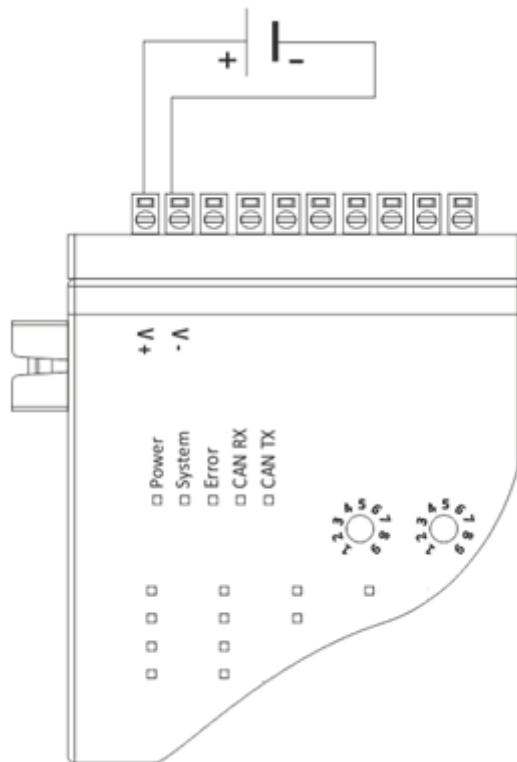


Figure 19 XIO211.AI4A04 Power Connection Diagram

## 6.2.2 Analog Input and Outputs

Analog Input:	4 Channel
Module Input Type:	Current or Voltage
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
Module Output Type:	Current or Voltage
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

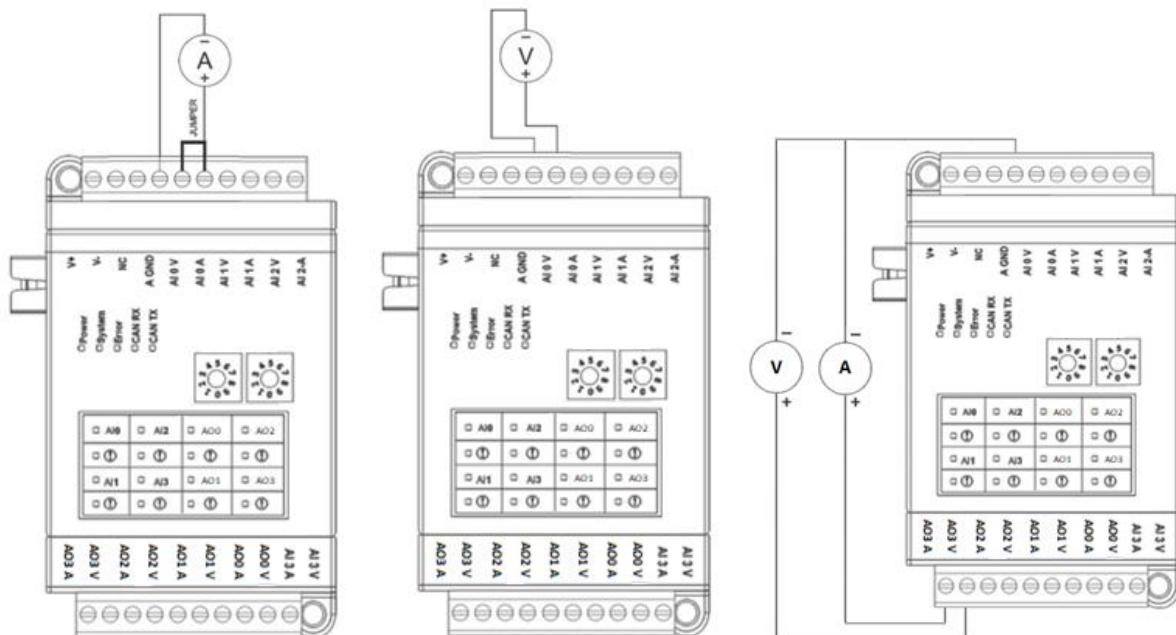
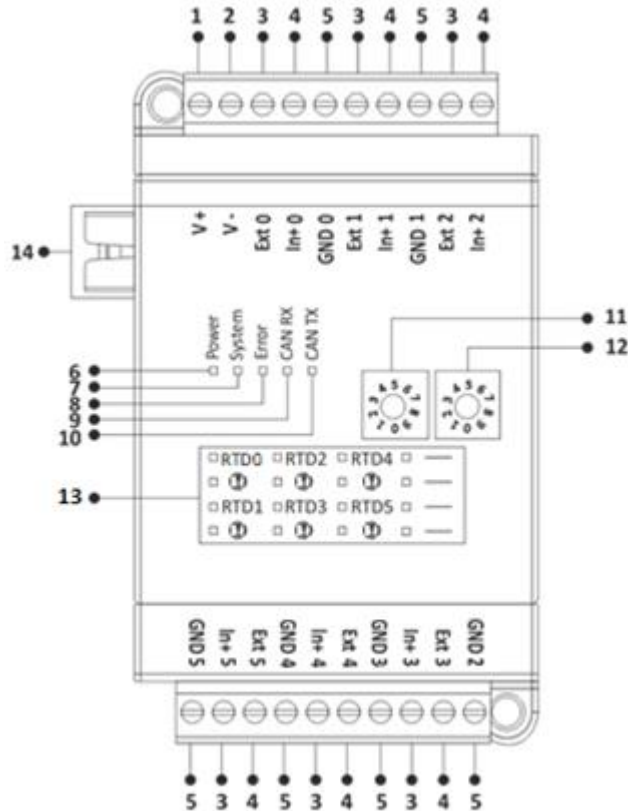


Figure 20 XIO211.AI4AO4 Connection Diagram

## 7 XIO211.P6 RTD INPUT (PT100/PT1000)

### 7.1 XIO211.P6 GENERAL INFORMATION

#### 7.1.1 Physical Interfaces



**Figure 21 XIO211.P6 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

### 7.1.2 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

## 7.2 CONNECTION DIAGRAMS

### 7.2.1 Supply Connection

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

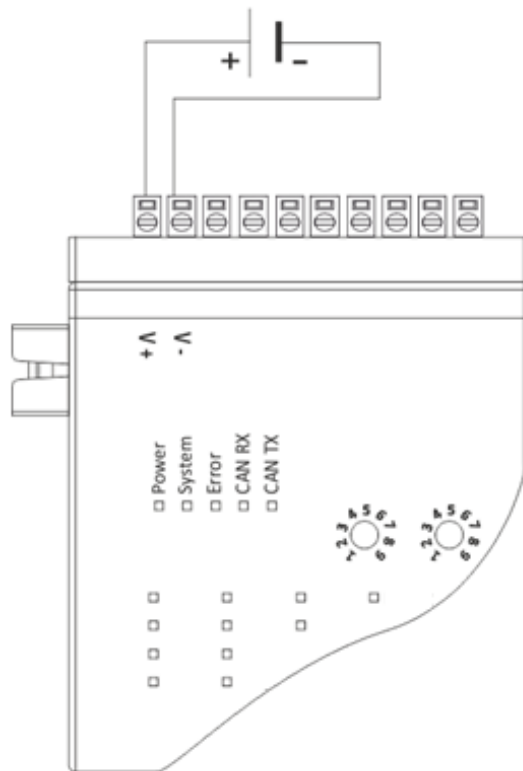


Figure 22 XIO211.P6 Power Connection Diagram

## 7.2.2 RTD Inputs

RTD Input:	6 Channel
RTD Input Type:	PT100 or PT1000
RTD Input Resolution:	12 Bit
RTD Input Accuracy:	%1 Accuracy
RTD Input GND Connection:	6 GND (6 Point / Common)
Temperature Range:	-200...400 C

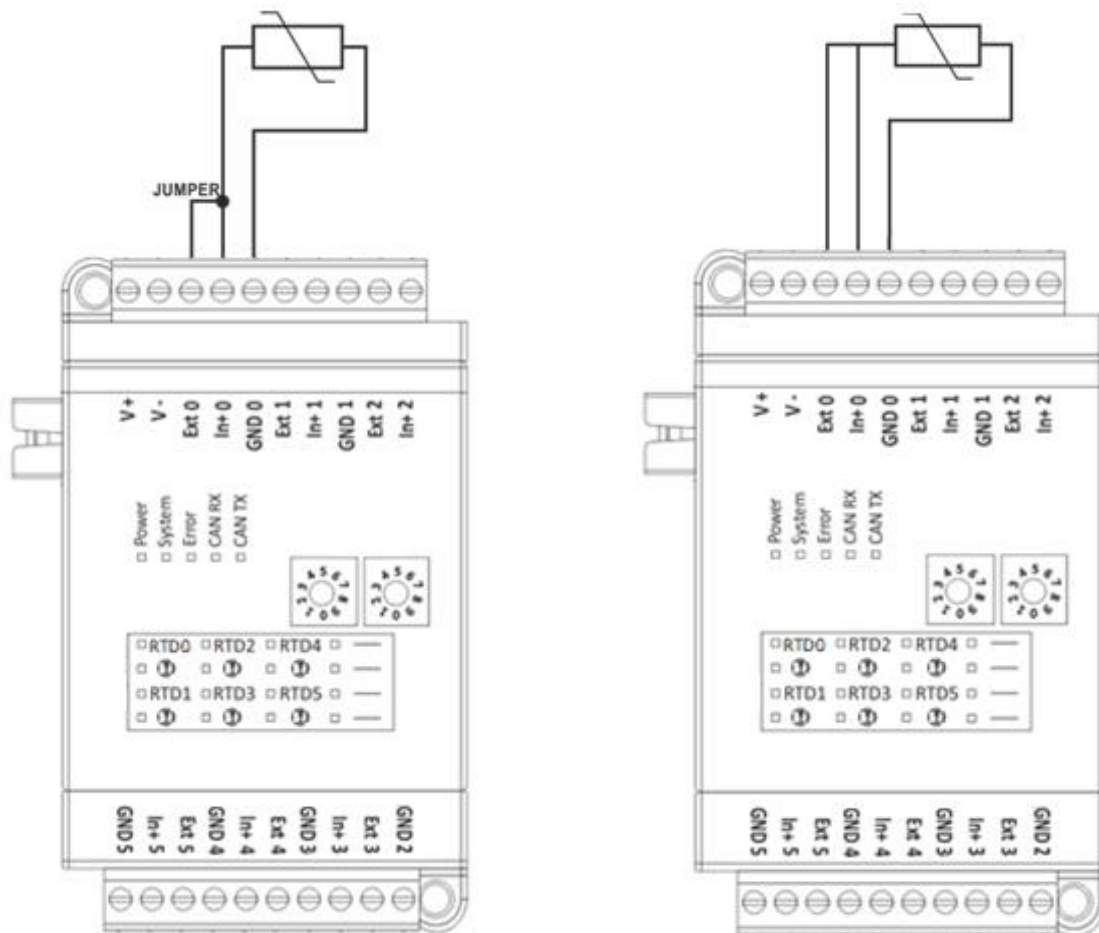
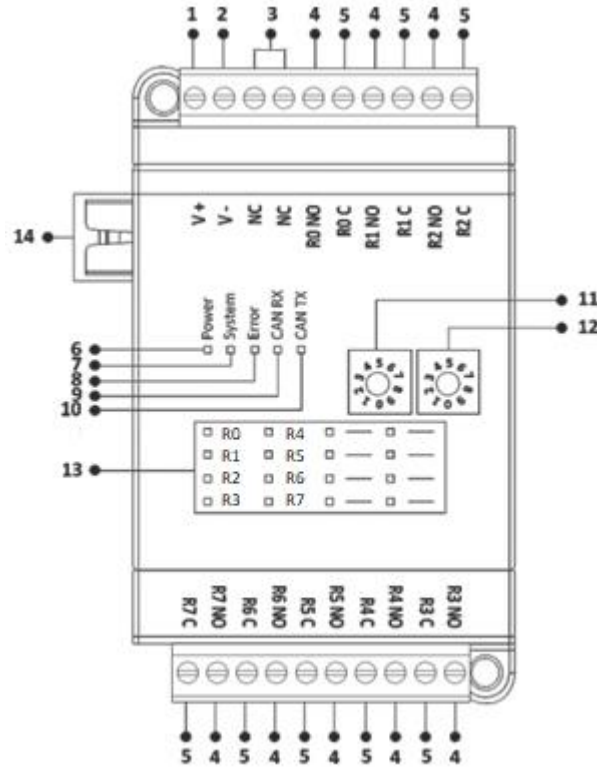


Figure 23 XIO211.P6 2 and 3 Wire RTD Input Connection Diagram

## 8 XIO211.R8 RELAY OUTPUT

### 8.1 XIO211.R8 GENERAL INFORMATION

#### 8.1.1 Physical Interfaces



**Figure 24 XIO211.R8 Connector and Physical Interfaces**

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

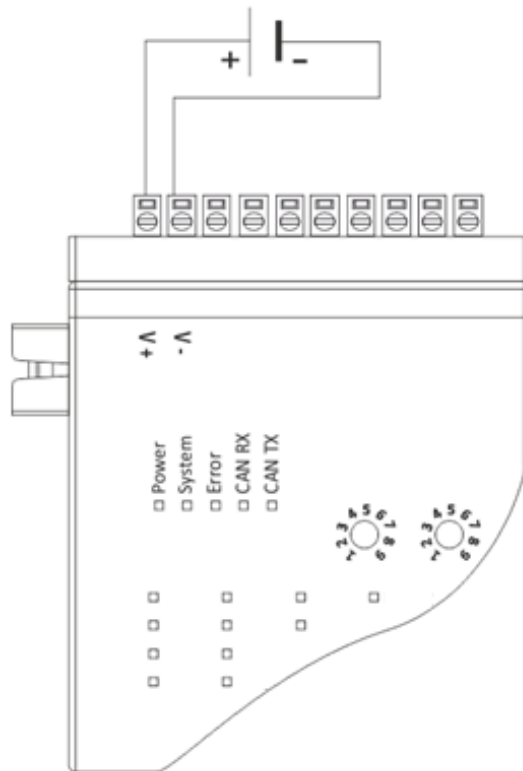
### 8.1.2 General Device Specifications

SPECIFICATION	ITEM	DESCRIPTION
Electrical	Supply (Standard)	24 VDC (12-36VDC)
	Supply (Optional)	Over Expansion Bus
	Power	<13W
	Power Protection	Yes
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

## 8.2 CONNECTION DIAGRAMS

### 8.2.1 Supply Connection

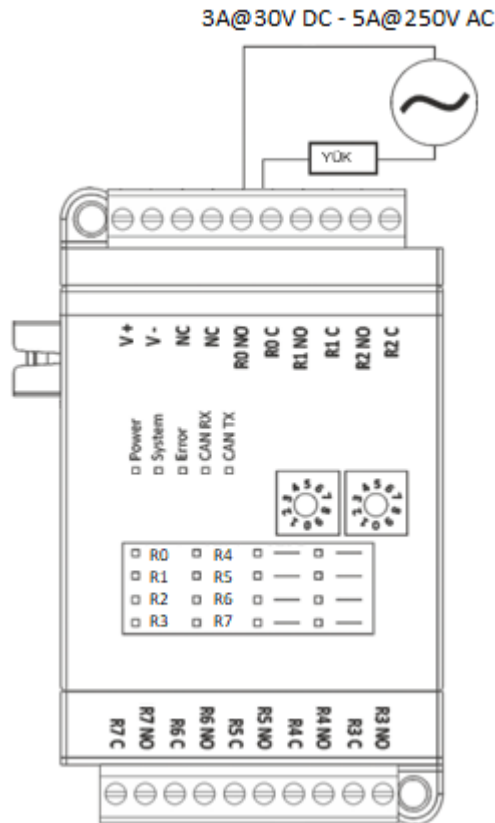
Supply:	12-36 VDC, Protected
Power:	<13 W



**Figure 25 XIO211.R8 Power Connection Diagram**

### 8.2.2 Relay Outputs

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 26 XIO211.R8 Connection Diagram**