



Akıllı Kontrolde Teknoloji Devi

RTU300 SERIES

HARDWARE MANUAL

- RTU310/RTU320/RTU330/RTU340/RTU350
RTU Series

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Preface



Mikrodev RTU300 and RTU400 series RTUs can monitor and control Intelligent Electrical Devices (protection relays, reclosing cutters, energy and quality analyzers ... etc) via industry standard protocols like IEC 61850, Modbus TCP and Modbus RTU. They can also communicate with SCADA or control center software via IEC 60870, DNP3 and MODBUS TCP protocols. With its easy, flexible and fast programming capabilities and expandable I/O capability up to 1024 points, Mikrodev RTU products are preferred for electrical applications.

MicroDev RTU300 and RTU400 Series RTUs are programmed mainly using Function Block Diagram - FBD language which is defined in IEC 61131-3 standard. Thanks to programming with FBD language, you can develop applications easily and quickly with drag and drop logic.

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 RTU 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, benzine, 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

1 RTU300 GENERAL INFORMATION

1.1 Physical Interfaces

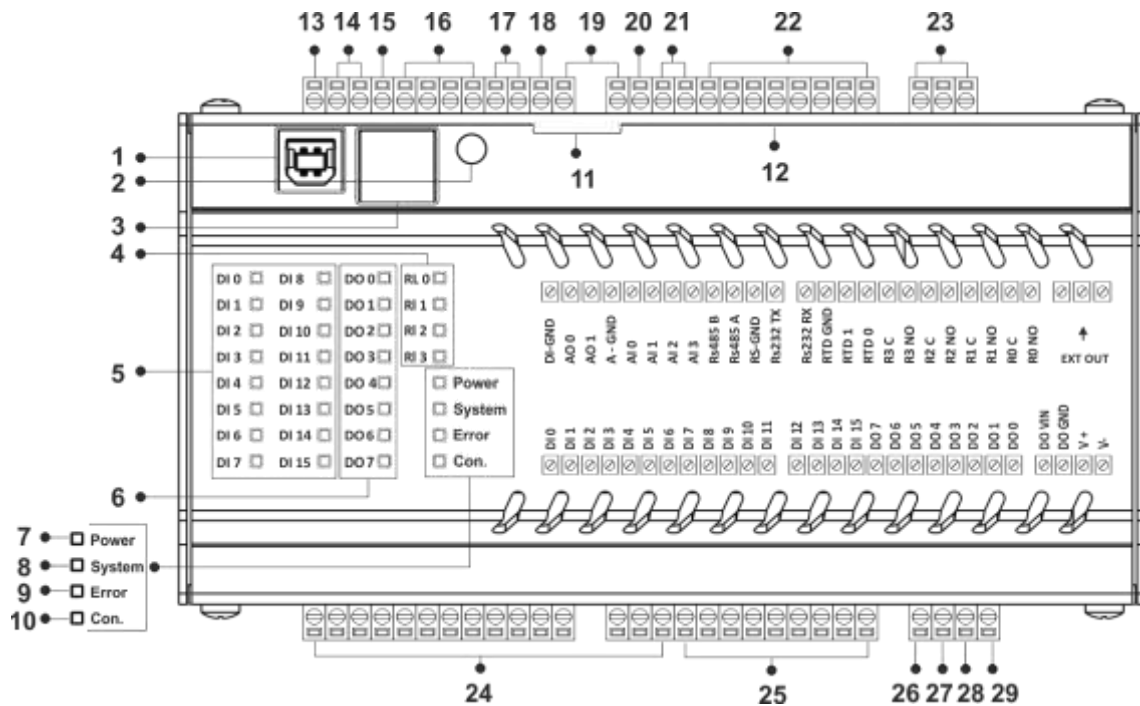


Figure 1 Connector and Physical Interfaces

1	USB Port	16	Analog Input Connections
2	Antenna Connection	17	RS485 Connections
3	Ethernet Port	18	RS-232 Neutral Connection
4	Relay Status Info	19	Rs232 TX-RX Connections
5	Digital Input Status Info	20	RTD Neutral Connections
6	Digital Output Status Info	21	RTD Connections
7	System Power LED	22	Relay Connections
8	System Running LED	23	CAN BUS Haberleşme Connection
9	Error LED	24	Digital Input Connections
10	Data Transfer via Protocols	25	Digital Output Connections
11	SIM Card Holder	26	Digital Output Supply Connection
12	SD Card Holder	27	Digital Output Neutral Connection
13	Digital Input Neutral Connection	28	Device Power (V+) Connection
14	Analog Output Connections	29	Device Power (V-) Connection
15	Analog Neutral Connection		

1.2 General Device Specifications

SPECIFICATION	ITEM	DESCRIPTION
Processor	Processor Architecture	ARM Cortex M4
	Precossror Internal RAM	196 KB
	CPU Processing Speed	168 MHz
	Adressing Architecture	Little Endian Addressing
Electrical	Supply	24 VDC (12-36VDC)
	Power	<10W
	Real Time Clock	Integrated
Input / Output	Digital Input	16
	Digital Output	8
	Analog Input	4
	Analog Output	2
	Relay Output	4
	RTD	2
Enviromental Conditions	Operating Temperature	-30 / +75 C
	Storage Temperature	-40 / +85 C
	Humidity	5..95 RH
Memory	Retentive Memory	4KB
	Event Memory	2000*
	Program Memory	4MBit
Communication Ports	Ethernet Port	100 Mbit, MODBUS TCP
	RS485	1
	RS232	1
Wireless Communication	UMTS/HSPA+ Module	HSDPA 14.4Mbps HSUPA 5.76Mbps GPRS/EDGE Multi-slot Class 12
	Wi-Fi	
Global Navigation Satellite Systems	GNSS-GPS	16 GPS channels
Extension Capacity	RAIL Type- CANBUS Extension	Max. 640 Digital IO (256 DI, 256 DO, 128 Relay Output)Max. 96 Analog IO

		(32 AI, 32 RTD Input, 32 AQ)
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2 INSTALLATION INFORMATION

2.1 Rail Installation

DIN Rail Mountage

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.

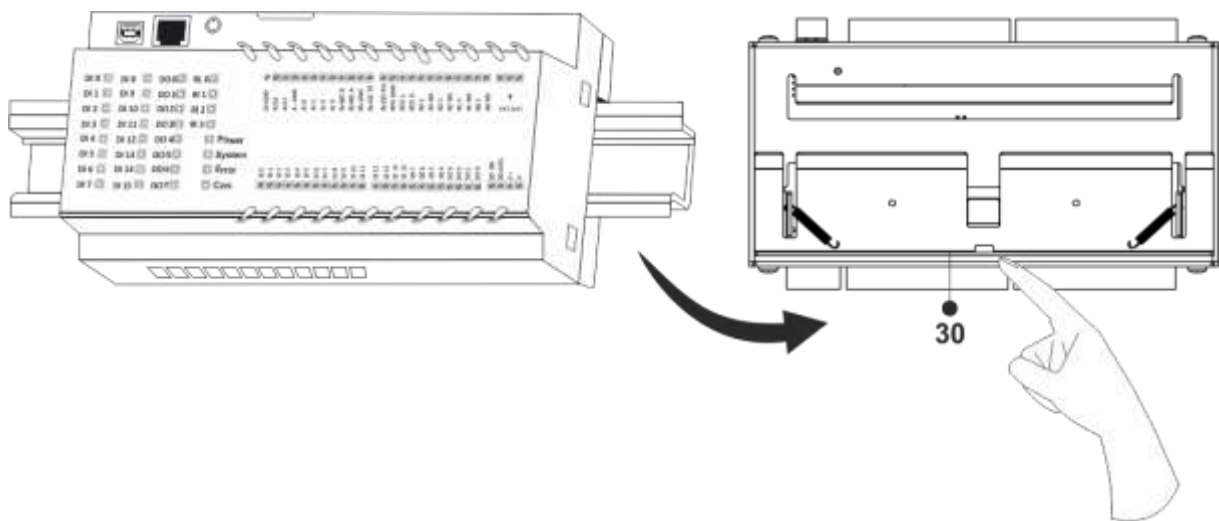


Figure 2 Mountage

DIN Rail Demountage

To demount the device, firstly it is pulled from the bottom using flexibility of the spring, the device is removed from the DIN Rail and the demounting is completed.

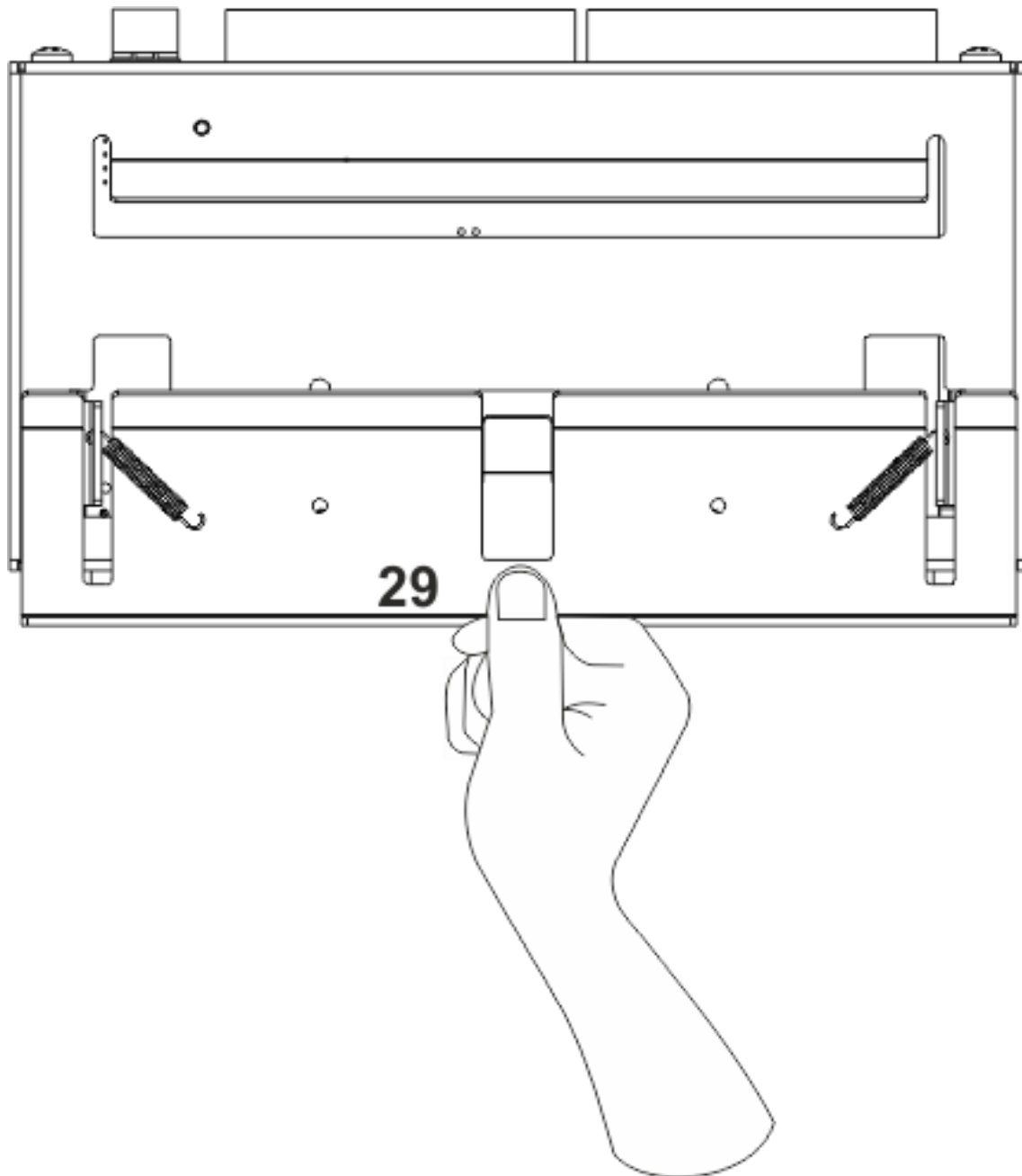
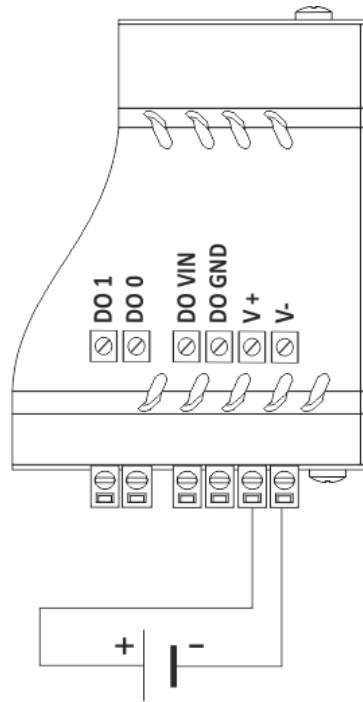


Figure 3 De-mountage

3 CONNECTION DIAGRAMS

3.1 Supply Connection

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



24 VDC (12 VDC - 36 VDC)

Figure 4 Power Connection

3.2 Digital Inputs

Module Input:	16 (Sink)
Voltage Range:	0-30 VDC
ON Voltage Level:	7 VDC -30 VDC
OFF Voltage Level:	0-4 VDC
Input Impedance:	>2M
Isolation:	Optical
OFF to ON Response:	20 us
ON to OFF Response:	90 us
Fast Counter Inputs:	DI12, DI13, DI14, DI15

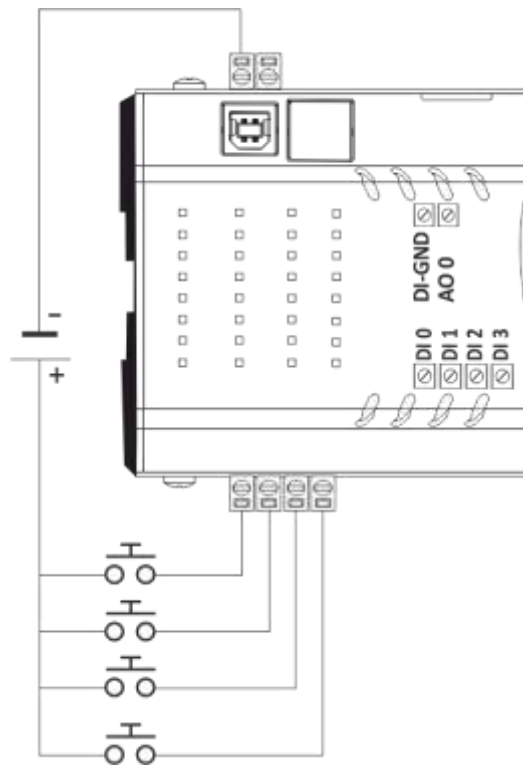


Figure 5 DIN Connection

3.3 Digital Outputs

Module Output:	Mosfet Output
Voltage Range:	0-40 VDC
Max. Output Current:	2 A/point (@30V)
Isolation:	Optical
External Voltage Input:	3.3-40 VDC
Fast Outputs PWM, PTO:	DQ1, DQ2, DQ3, DQ4
Fast Outputs Max. Frekans	20 kHz

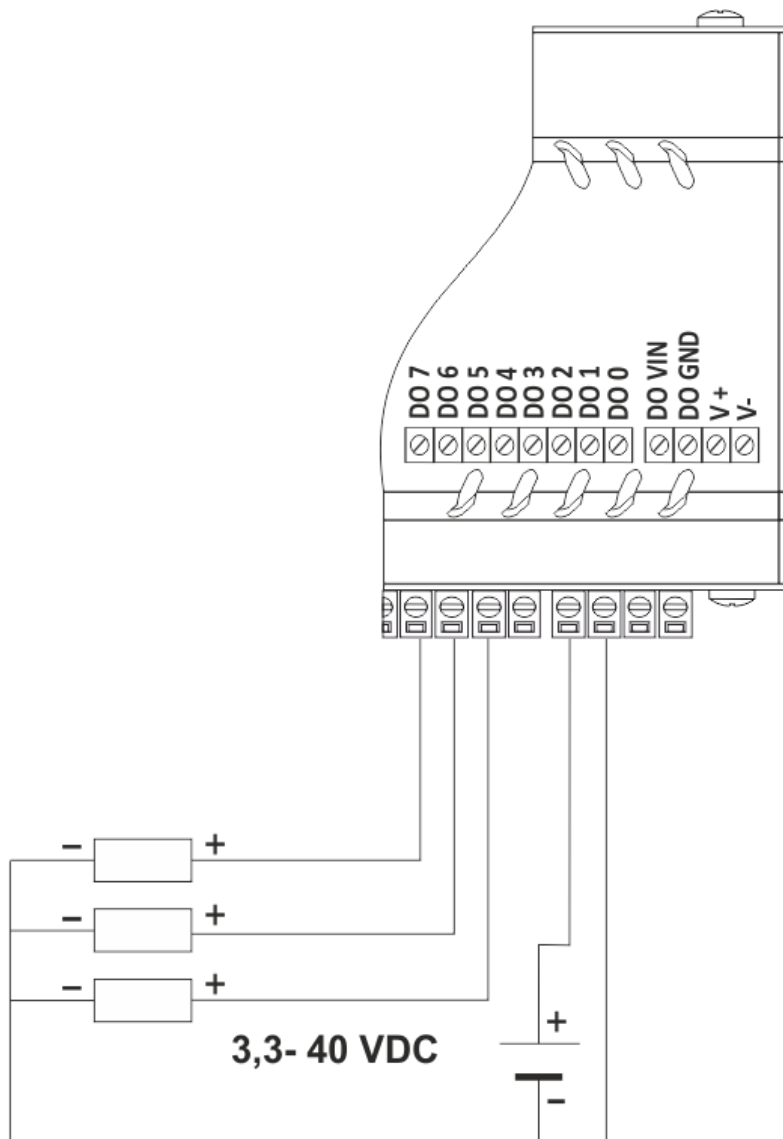


Figure 6 DOUT Connection

3.4 Relay Outputs

Module Output:	4
Relay Contact Outputs:	COM-NO (Normally Open)
Contact Max. Current:	3A@250VAC – 3A@30VDC
Isolation	Potential of relay contacts are isolated from power source and inputs.(Dry Contacts)

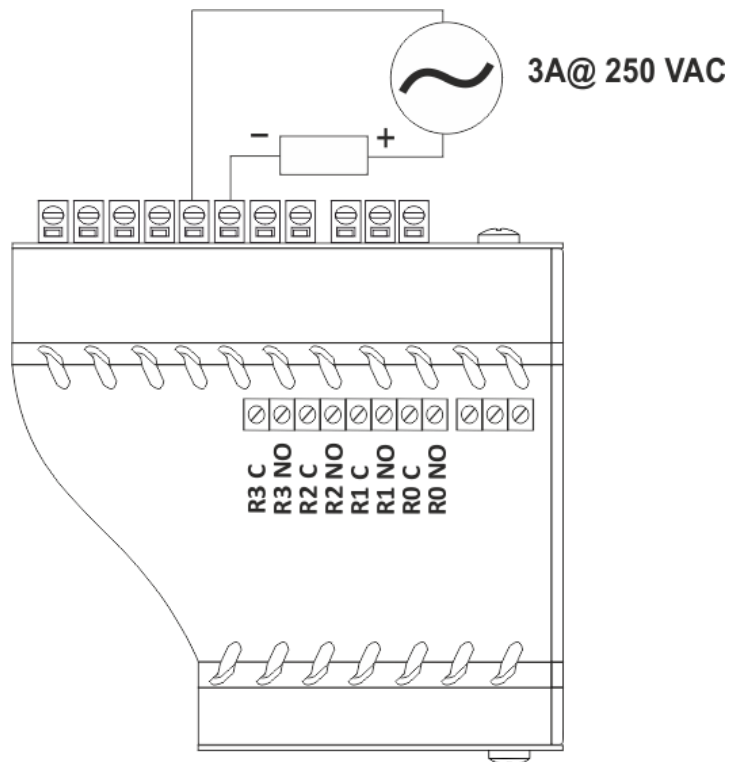


Figure 7 Relay Connection

3.5 Analog Inputs

Current Input Count	4
Current Input Type	Current, 0-20 mA
Current Input Precision:	%1 Precision
Common Input GND:	1 (4 point / common)

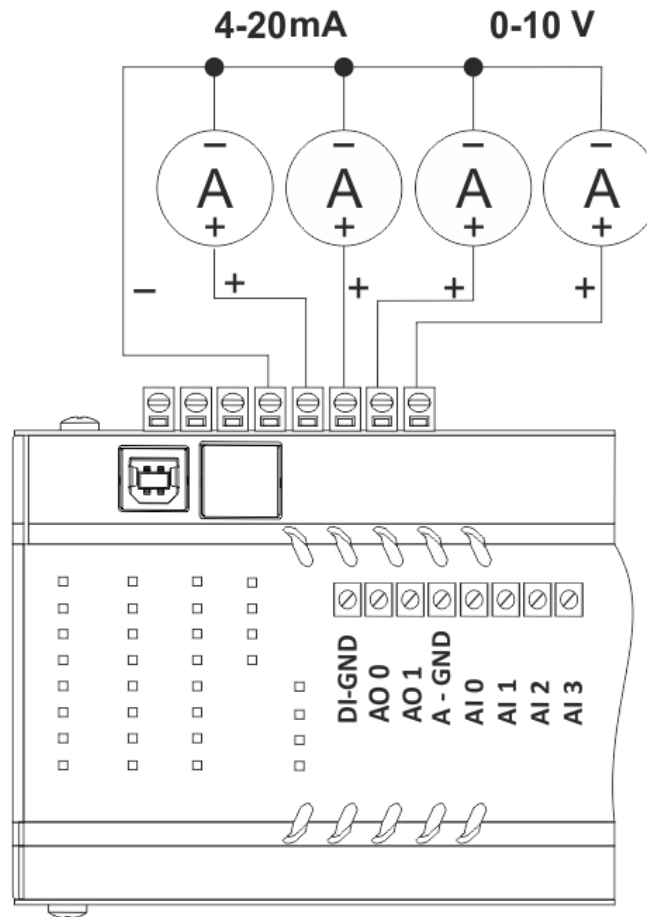


Figure 8 Analog Input Connection

3.6 Analog Outputs

Current Output Count	2
Current Output Type	Current, 0-20 mA
Current Output Precision:	%1 Precision
Common Output GND:	1 (2 point / common)

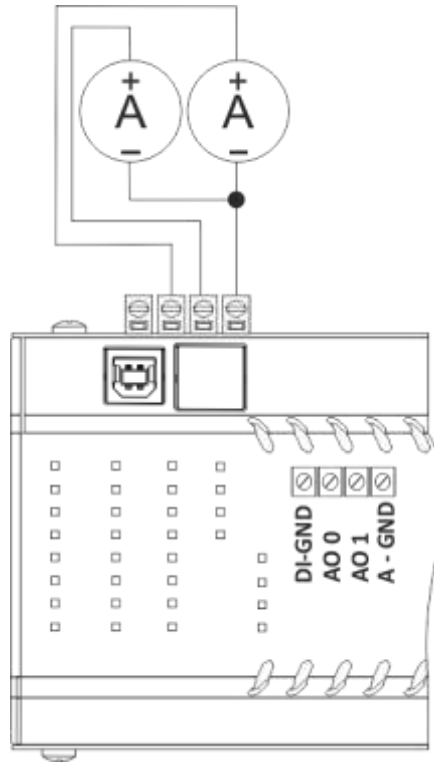


Figure 9 Analog Output Connection

3.7 RTD Inputs

RTD Input Count	2
RTD Input Type	PT1000, 2 wire
Temperature Range:	-50 ... +200 C
Common Input GND:	1 (2 points / common)

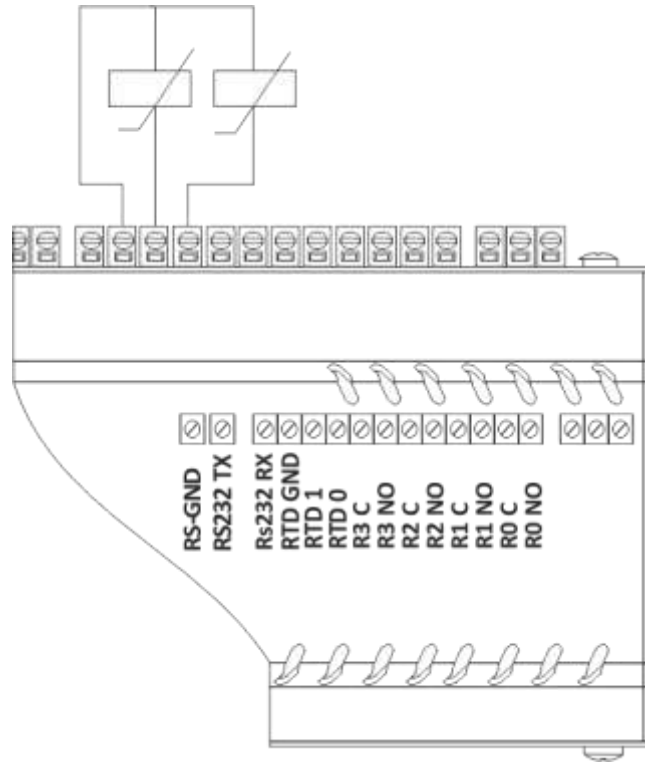


Figure 10 RTD Input Connection

3.8 RS485 SERIAL PORT

RS485 port Count:	1
Isolation:	Galvanic
Maximum Slave Counts:	200
Communication Distance:	1000 m
Data Bits:	7-8
Stop Bits:	1-2
Parity:	None-Even-Odd
Baudrate:	300 bps to 200 kbps

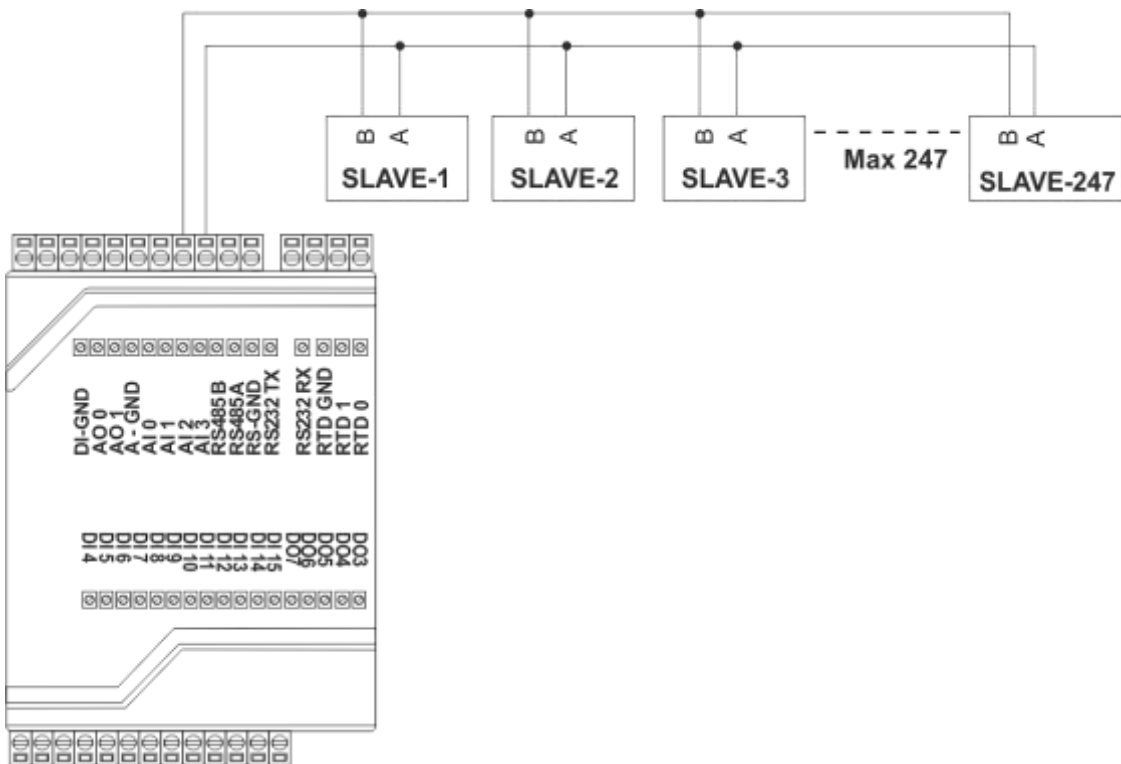


Figure 11 RS485 Input Connection

3.9 RS232 SERİ PORT –

RS232 port Sayısı:	1
Haberleşme Mesafesi:	10 m
Data Bits:	7-8
Stop Bits:	1-2
Parity:	None-Even-Odd
Baudrate:	300 bps to 200 kbps

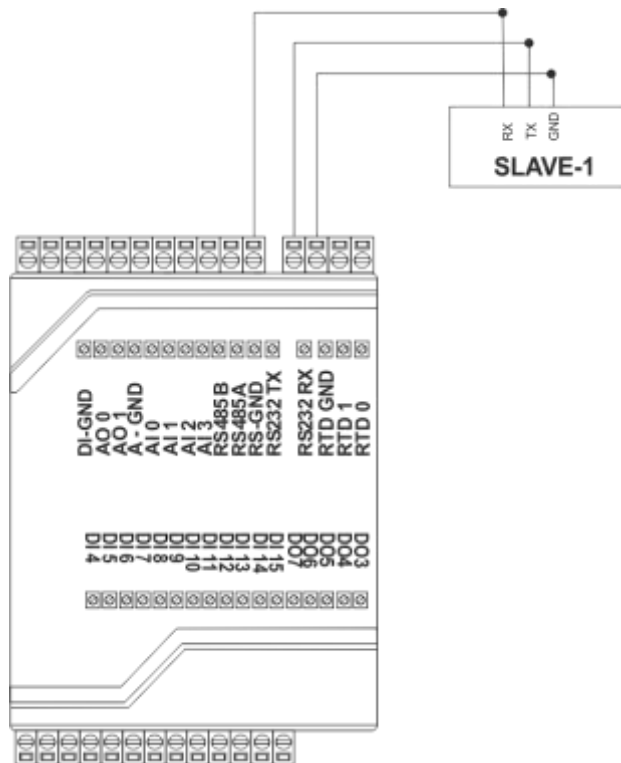


Figure 12 RS232 Input Connection

