



Innovation in Automation

DM50

HARDWARE MANUAL

- DM50

INDUSTRIAL ROUTER IOT PROTOCOL GATEWAY

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MIKRODEV_HM_DM50_EN

v1.0

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Preface



Mikrodev DM50 series industrial router iot protocol gateway can read and control Smart Electrical Devices (protection relays, reclosers, energy and quality analyzers, etc.) in the electrical sector with the industry standard protocols IEC 61850, MODBUS TCP and MODBUS RTU. TCP/IP connection settings are made over the product interface. It can also communicate with SCADA or control center software with IEC 60870, DNP3 and MODBUS TCP protocols.

Mikrodev industrial router iot protocol gateway products are preferred in electrical energy applications with their easy, flexible and fast programming capabilities and I/O facility that can expand up to 512 points.

In programming Mikrodev DM50 series, Function Block Diagram – FBD language defined in IEC 61131-3 standard is used. Thanks to programming with FBD language, it 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 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 DM50 GENERAL INFORMATION

1.1 GE0 Board Type Physical Interfaces

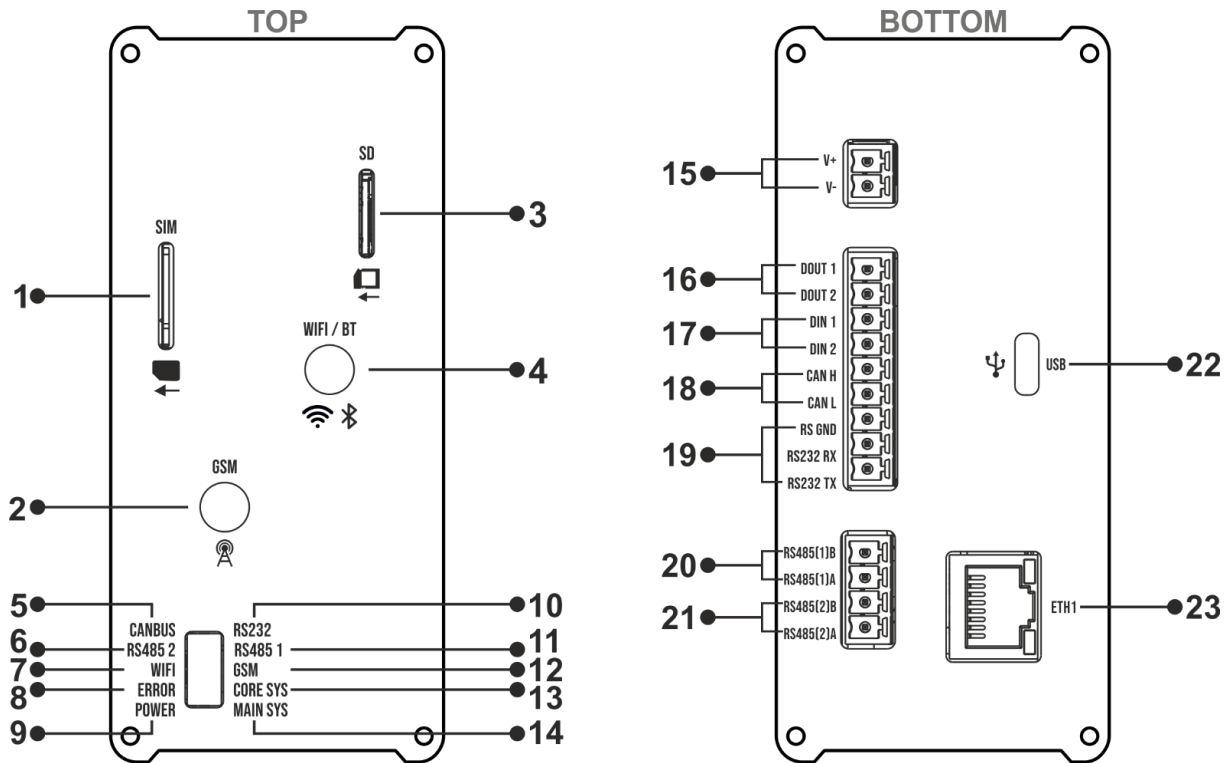


Figure 1 GE0 Board Type Connector and Physical Interface

1	SIM Card Slot	13	CORE System Status LED
2	GSM Antenna Connection	14	MAIN System Status LED
3	SD Card Slot	15	Device Power (V+/V-) Connection
4	WIFI Antenna Connection	16	Digital Output Connections
5	CANBUS Status LED	17	Digital Input Connections
6	RS485 Port 2 Data Transfer LED	18	CANBUS Connections
7	WIFI Status LED	19	N/A
8	System Error LED	20	RS485 Port 1 Connections
9	System Power LED	21	RS485 Port 2 Connections
10	N/A	22	USB Port
11	RS485 Port 1 Data Transfer LED	23	Ethernet Port
12	GSM Connection Status LED		

1.2 GE1 Board Type Physical Interfaces

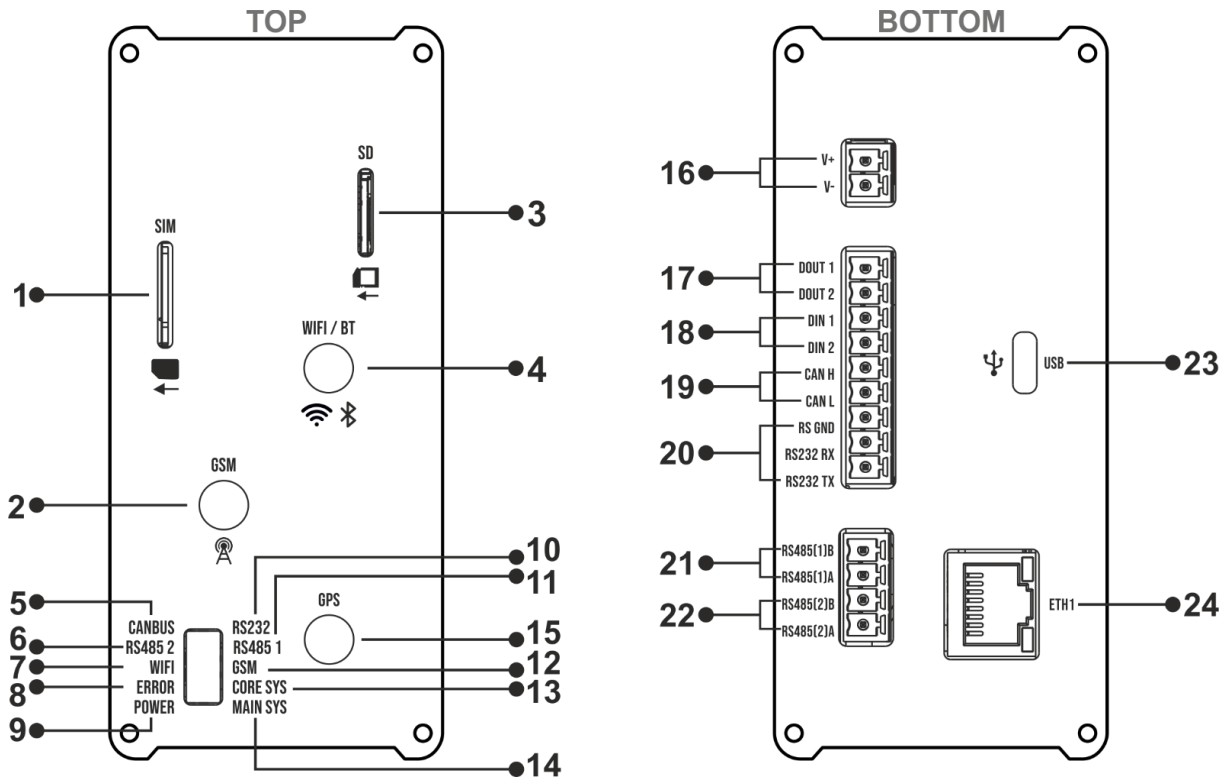


Figure 2 GE1 Board Type Connector and Physical Interface

1	SIM Card Slot	13	CORE System Status LED
2	GSM Antenna Connection	14	MAIN System Status LED
3	SD Card Slot	15	GPS Antenna Connection
4	WIFI Antenna Connection	16	Device Power (V+/V-) Connection
5	CANBUS Status LED	17	Digital Output Connections
6	RS485 Port 2 Data Transfer LED	18	Digital Input Connections
7	WIFI Status LED	19	CANBUS Connections
8	System Error LED	20	RS232 Connections
9	System Power LED	21	RS485 Port 1 Connections
10	RS232 Data Transfer LED	22	RS485 Port 2 Connections
11	RS485 Port 1 Data Transfer LED	23	USB Port
12	GSM Connection Status LED	24	Ethernet Port

1.3 General Device Specifications

SPECIFICATION	ITEM	DESCRIPTION	
Processor	Processor Architecture	ARM Cortex M0	
Electrical	Supply	24 VDC (9-30 VDC)	
	Power	300 mA @ 24V DC	
	Real Time Clock	Integrated	
Environmental Conditions	Operating Temperature	-20...+60 °C	
	Storage Temperature	-40... +85 °C	
	Humidity	25..95 RH	
	Protection	IP 20	
	Panel Mount Type	DIN Rail	
Memory	SD Card Support*	Micro SD	
	Retentive Memory	4 KB	
	Flash Memory	256 MB	
	Ram Memory	256 MB	
Communication Ports	Board Type	GE0	GE1
	GPS		1 Port
	RS232		1 Port
	RS485	2 Port, ESD Protection	
	RS232/RS485 Insulation *	000: No Isolation (GE0, GE1) 008: Yes (GE0) 00C: Yes (GE1)	
	Ethernet Port*	1 Port or 2 Port, 10/100 Mbps	
	GSM/LTE*	4G/LTE	
	WIFI*	1 Port 802.11 b/g/n	
	USB	1 Port, USB Type C	
Expansion Capacity	Din RAIL Type- CANBUS Expansion Modules	Up to 512 I/O Points	

* *Optionally selected.*

2 INSTALLATION INFORMATION

2.1 Rail Installation

DIN Rail Mountage

The top of the device is first attached to the DIN Rail. Then, with the help of the springs on the back of the device, when a light force is applied to the upper part of the device, the product easily passes to the DIN Rail and assembly is completed.

DIN Rail Demountage

In the disassembly of the device, the flexibility of the spring located at the back of the device is used, light force is applied towards the rail, the lower part of the device is released from the DIN Rail and disassembly is completed.

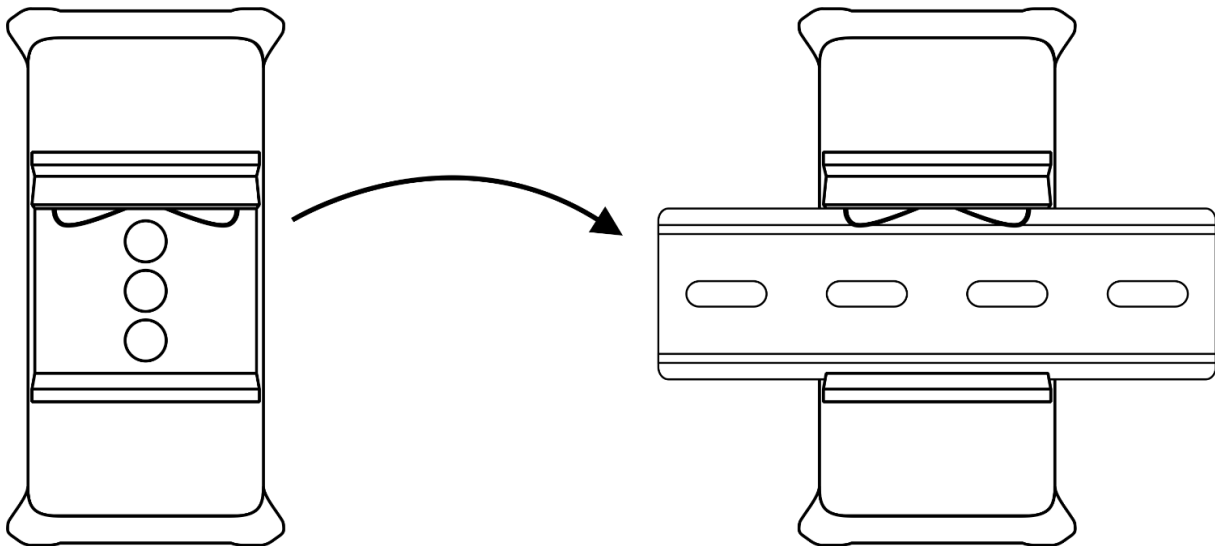


Figure 3 Mounting / Demounting

3 CONNECTION DIAGRAMS

3.1 Supply Connection

Board Type:	GE0, GE1
Supply:	24VDC (9-30 VDC), Protected
Power:	300mA @ 24V DC

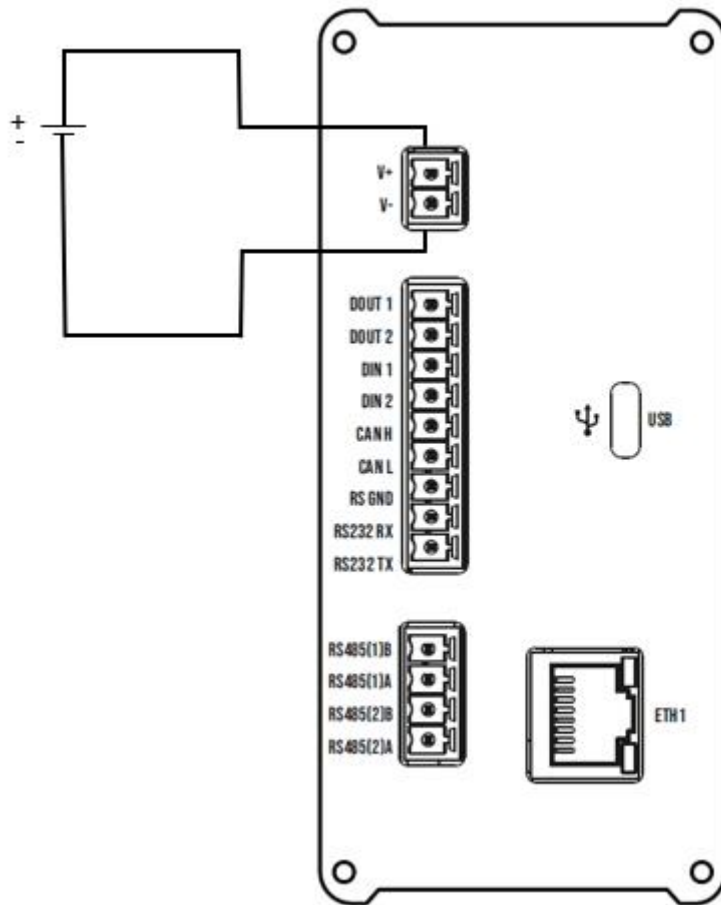


Figure 4 Power Connection Diagram

3.2 Digital Inputs

Board Type:	GE0, GE1
Module Input:	2 Channel, PNP
Voltage Range:	0-36V DC
ON Voltage Level:	7-36V DC
OFF Voltage Level:	0-6V DC
Input Impedance:	>2M
Isolation:	Optical
OFF to ON Response:	20 us
ON to OFF Response:	90 us

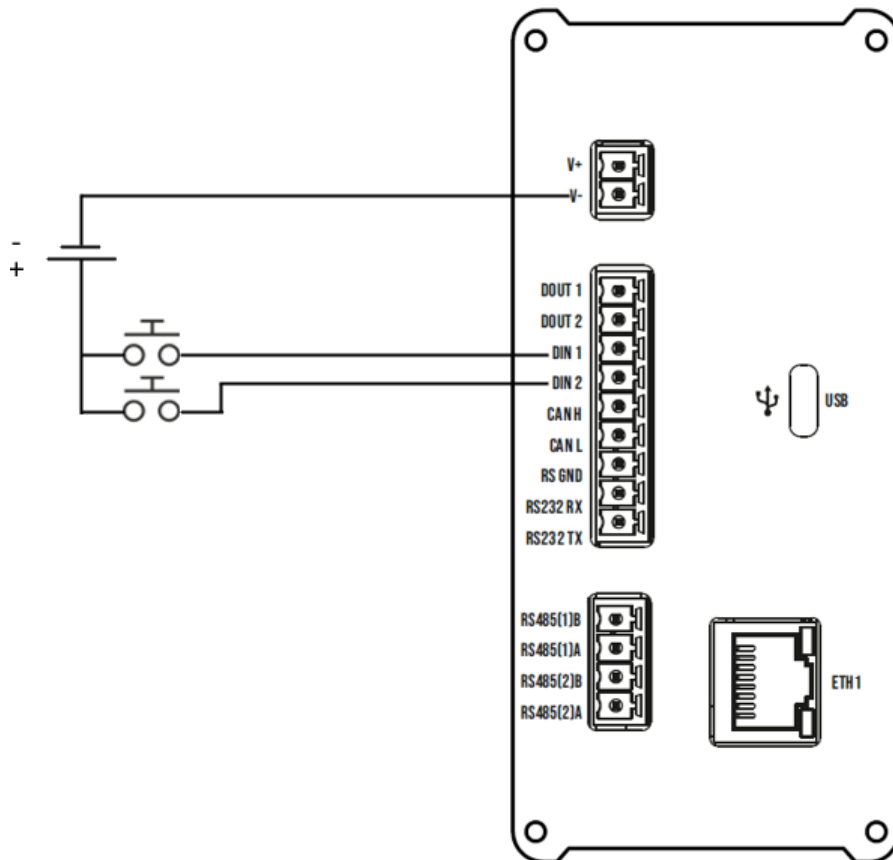


Figure 5 Digital Input Connection Diagram

3.3 Digital Outputs

Board Type:	GE0, GE1
Module Output:	2 Channel, Mosfet Output
Module Output Type:	PNP Transistor
Voltage Range:	9-30V DC
Max. Output Current:	1.5A @ 24V DC
Isolation:	Optical

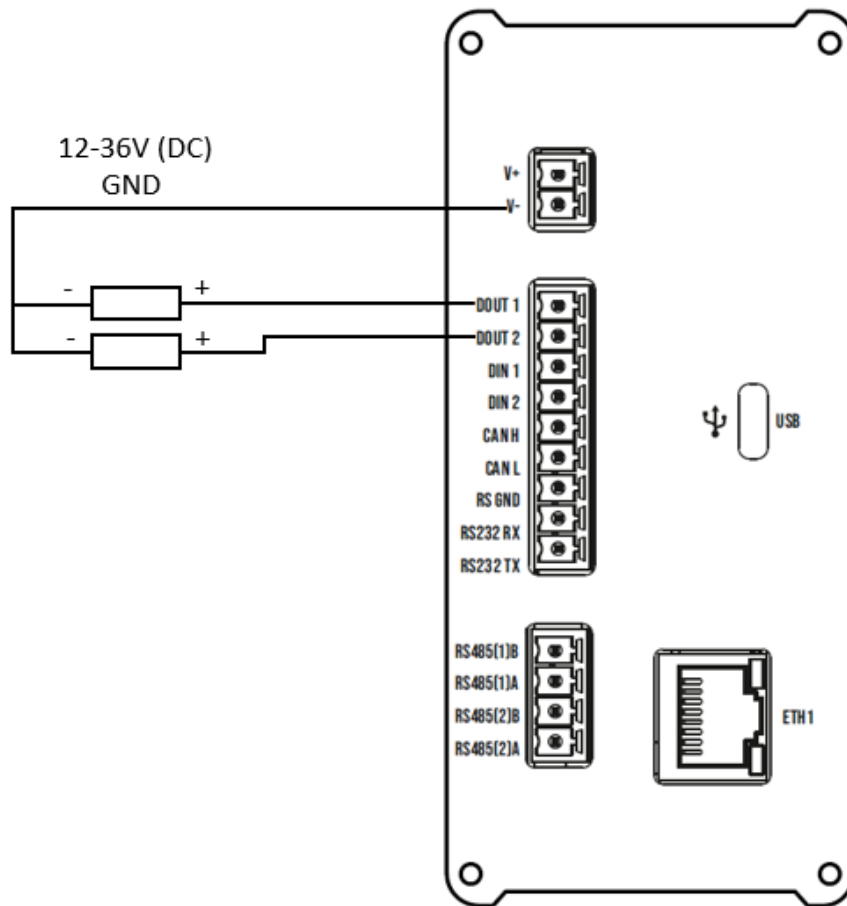


Figure 6 Digital Output Connection Diagram

3.4 RS485 Serial Port

Board Type:	GE0, GE1
RS485 Port Count:	2 Port
Maximum Slave Counts:	Limited to Hardware
Isolation:	ESD Protection, 8 kV Direct, 25 kV Air Discharge
Communication Distance:	1000 m
Data Bits:	7-8
Stop Bits:	1-2
Parity:	None-Even-Odd
Baudrate:	300 bps to 200 kbps

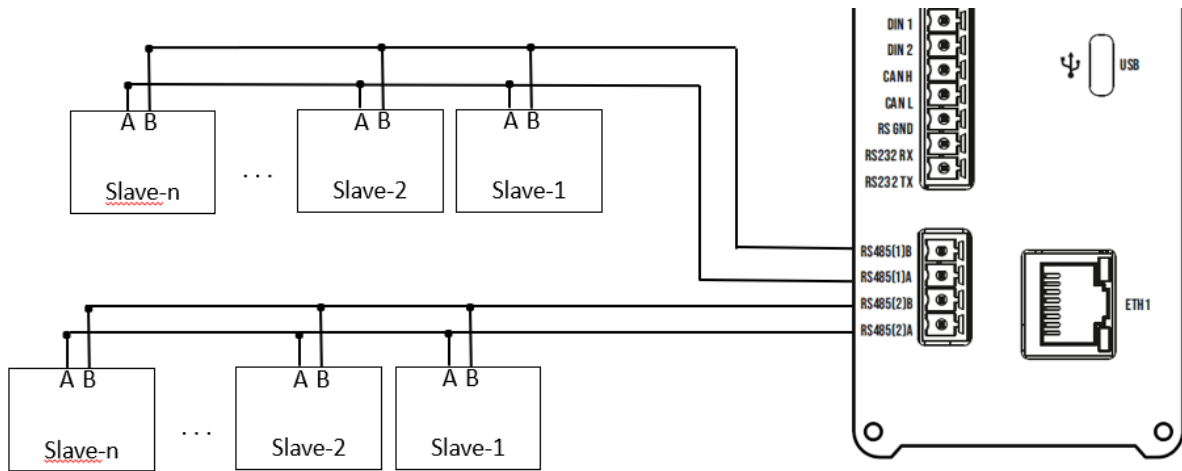


Figure 7 RS485 Serial Port Connection Diagram

3.5 RS232 Serial Port

Board Type:	GE1
RS485 Port Count:	1 Port
Communication Distance:	10 m
Data Bits:	7-8
Stop Bits:	1-2
Parity:	None-Even-Odd
Baudrate:	300 bps to 200 kbps

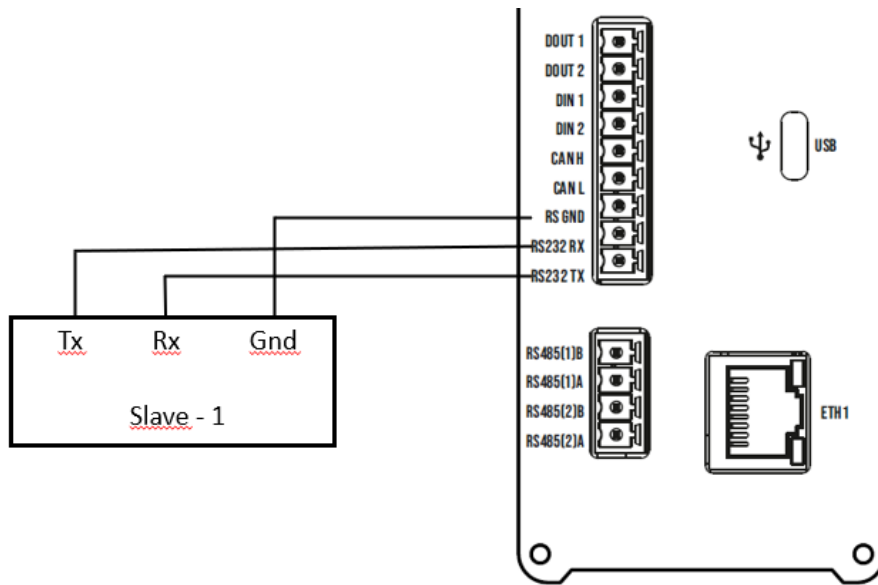


Figure 8 RS232 Serial Port Connection Diagram