Features

- 220V AC power supply
- 13 pcs Passive Analog Inputs that can be used as voltage-free dry contacts or NTC10K sensors
- 2 pcs Tacho Inputs
- 2 pcs 0-10V Active Analog Inputs
- 9 pcs Digital Outputs (Relay 10A)
- 4 pcs 0-10V Analog Outputs
- Optional 2 pcs Triac Outputs
- Optional 24 V AC Output
- Configuration DIP Switch (CONFIGURATION)
- Address DIP Switch (ADDRESS)
- Modbus RTU Communication
- Optional BACnet MS/TP Communication
- Room panel connection
- Optional RS-485 Communication

Applications

HR510 series are used in building automation and HVAC application. The module is designed and manufactured to work seamlessly with all devices thanks to Modbus/BACnet communication.

Notes on Usage

Please, read this document carefully. HR510 has been designed and manufactured in accordance with the latest technological developments and safety rules. To avoid injury and property damage safety warnings must be observed.

Security Advice-Caution

Installation, maintenance, and repair of the device should be made by authorized personnel. The device has 220 V AC and 1 A internal fuse power supply. Relay outputs do not have internal protection due to the variety of components that can be used. It is recommended to use an external C type fuse suitable for the required current level. Each pin of the supply and relay terminals can carry a maximum current of 20 A. Before making relay output connections, attention should be paid to recommended current levels.
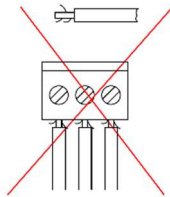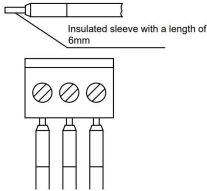
The ends of the connection wires must be protected against delamination using insulated sleeves as shown on the figure.

Order Information

Product Code	Definition	Power	Communication
HR510.11	9 pcs Digital Outputs (Relay) 4 pcs Analog Outputs	12VA max.	Modbus RTU
HR510.12	13 pcs Passive Inputs 2 pcs Tacho Inputs 2 pcs Analog (Active) Input 2 pcs Triac Outputs (Optional)		BACnet MS/TP

Technical Specification

Power Supply	220VAC +%10-%15, 50/60Hz
Power Consumption	12VA max.
Operating Temperature	0°C... +50 °C
Storage Temperature	-20°C ... +70°C
Relative Humidity	%5….95 rh, Non-Condensing
Cable Connected	Socket Terminal Block, max 1 x 2,5 mm2
Measuring Range	NTC10K -50°C...+150°C Analog Input Voltage: 0-10V
Measuring Resolution	NTC10K: 0.1°C Analog Input: 0.1 V
Inputs	13 pcs Passive Inputs (NTC10K Temp sensor or Voltage Free Dry Contact) 2 pcs Tacho Inputs 2 pcs 0-10V Active Analog Input
Outputs	9 pcs Digital Outputs (10A Relay) * 4 pcs 0-10V Analog Outputs 2 pcs Triac Outputs**(Optional)
Communication	RS-485, Modbus RTU, BACnet MS/TP
Plastic Box	IP20 according to EN 60529
Box Type	Rail Type Bottom Table
Plastic Enclosure Material	ABS (UL 94 V-0)
Dimensions (HR510)	212 x 46 x 115 mm (W x H x D)
Dimensions (HR510+EQTR)	212 x 69 x 115 mm (W x H x D)

* There are relays with 10A current capability on the product. The recommended maximum current level for optimum relay life is 8A for resistive loads and 5A for inductive loads.
**Recommended maximum current is 8A. Considering the inrush current, a 10 A fuse is installed.

Mounting Location
Due to its structure, the device is suitable for wall mounting or rail mounting within the panel. It is recommended to leave space for cable connections to the terminals to be made while mounting on the rail.

CAUTION: Power off the supply at C type circuit breaker or glass fuse before installation to avoid fire, shock or death

Mounting Instructions

Please follow the below instructions during mounting.

1. **Step:** Make sure the device is powered OFF.
2. **Step:** Connect the wires and equipment according to the connection diagrams below.
3. **Step:** Scenario selection and factory reset operations are done via the CONFIGURATION DIP Switches.
4. **Step:** Make sure that all connections are made correctly.
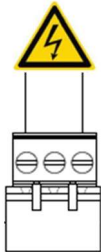5. **Step:** Power the device.

Connection Diagram
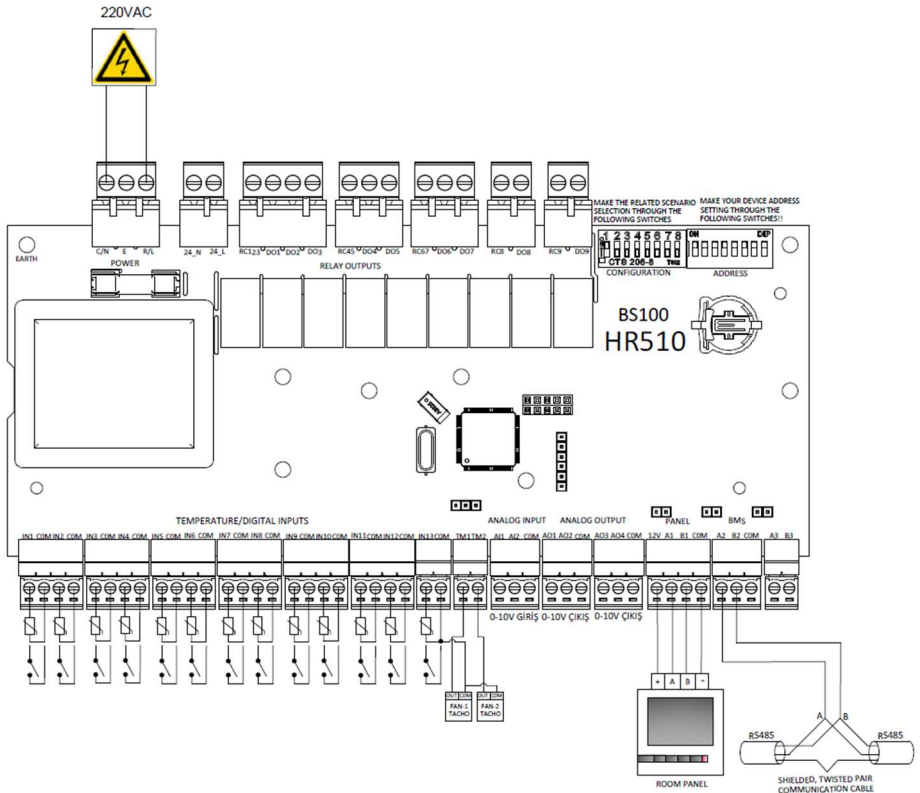
HR510 Connection Diagram

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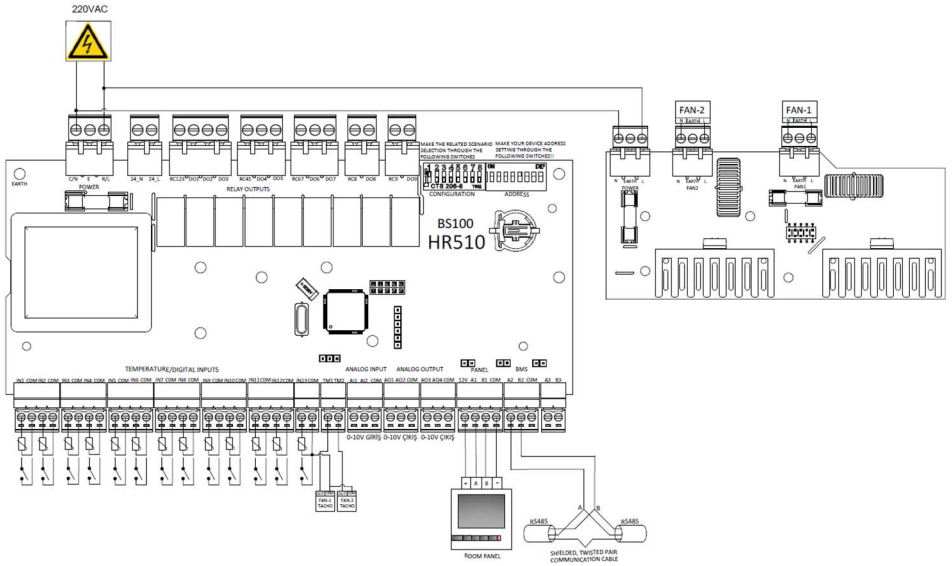
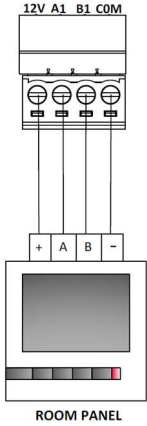**HR510+EQTR Connection Diagram**

Device Power Connection

220 VAC 50/60 Hz

Line output of 220VAC power supply is connected to L(Line) terminal and neutral output of the 220VAC power supply is connected to N(Neutral) terminal. The maximum current that can pass through the power terminal is 20A.

Panel Communication

Connections are made as shown in the left figure to ensure communication between the panel and the card.

Triac Connection
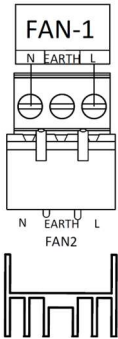
Fan connections L(line) and N (Neutral) cables are connected to the relevant terminals on the board as shown in the left figure The maximum fan current that can be used at triac outputs is 8 A. The maximum current that the terminal can carry is 20A.

Digital Outputs
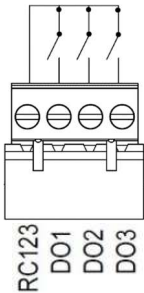
The voltage to be switched with DOx relays should be connected to the RC terminal. The voltage connected to RC terminals can be received from the DOx terminals when the DOx relays are closed. This applies to all digital output terminals. The maximum current that each pin of the terminal can carry is 20 A. 20 A is the maximum current that can pass through the RCX input.

Passive Inputs (NTC10K)

Connect the two cables of the NTC10K sensor as shown in the left picture. You can also make this connection for other passive input terminals.

Passive Input (Dry Contact)
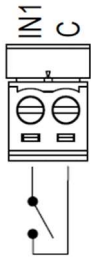
Connect the two cables of the Dry contact as shown in the left picture. You can also make this connection for other passive input terminals. (If the IN13 input is to be used as a water switch, the jumpers under the words TM1 and TM2 on the PCB should be activated.)

Passive Inputs (Tacho)
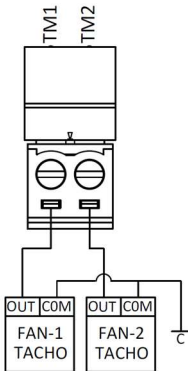
You can activate the Tacho input connection by connecting one cable of your field device with TM1 and the other cable with COM as shown in the left figure. You can connect with any COM on the passive analog input.

Analog Inputs
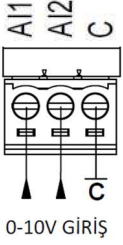
Connect the 0-10V output cables coming from the sensors, field devices, etc. to the AIx input. Connect the GND or COM cable of the relevant device to the "COM" terminal of the HR510 module as shown in the left picture.

Analog Outputs
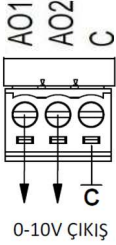
Connect the AOx 0-10V output to the related device's 0-10V input. Connect the GND or COM cable of the related device to the "C" terminal as shown in the left picture.
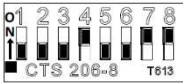
Switch Settings
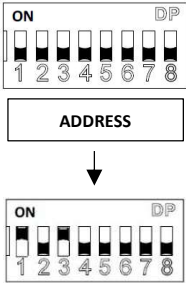
Set the Modbus address as binary between 1-247 (BACnet 1-127) via the Address (ADDRESS) DIP switch.

→ **For example:** When the **1st** and **3rd** switches are turned **ON**, the address of the device will be **5**.
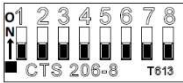
Set the Baud rate and parity settings of the device on the basis of the "Baud Rate Table" below, via the CONFIGURATION DIP switch.

CONFIGURATION

→ **For example:** When the 7th and 8th switches are turned ON, the device works at 76800 Baud rate.

Cihaz Address : Default 1
Baud rate : Default 9600
Parite : Default None

Note: In order for the device address, baud rate and parity changes to be valid, the power must be cut off.

BAUD RATE SETTING VIA THE CONFIGURATION DIP SWITCH						
Desimal	Dip Switch 7	Dip Switch 8	Baud Rate (bps)	Bits	Stop Bit(s)	Parity
0	0	0	9600	8	1	None
1	1	0	19200	8	1	None
2	0	1	38400	8	1	None
3	1	1	76800	8	1	None

Note 1: The device is set to communicate at 9600 bps by default.
Note 2: Baud rate adjustment should be done during the first installation and when the device is powered off.

Communication Connection and End of Line (EOL)


SHIELDED, TWISTED PAIR COMMUNICATION CABLE
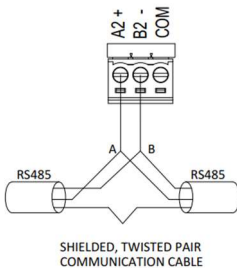
Communication connection can be made as shown in the left figure. Make a connection between the "A" or "+" terminal of the device communication port and the A2 terminal of the control card and between the "B" or "-" terminal and the B2 terminal. To activate the end-of-line resistor, activate the jumper above the word A2 B2 on the PCB.

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Dimensions with EQTR (mm)

212mm

115mm

69mm
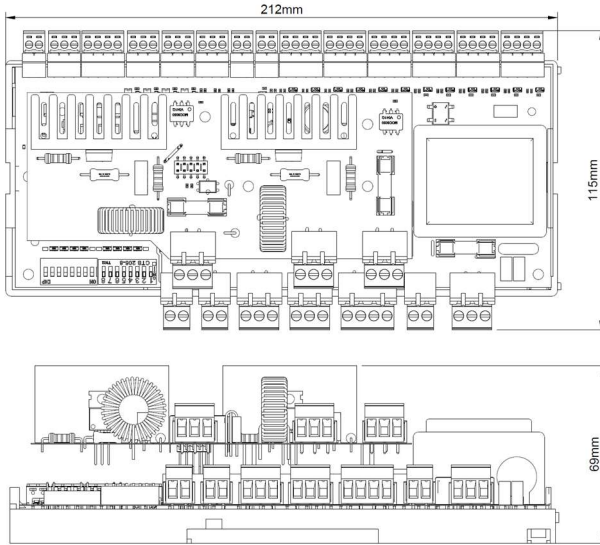
HR510 Dimensions (mm)

46mm

212mm

115mm
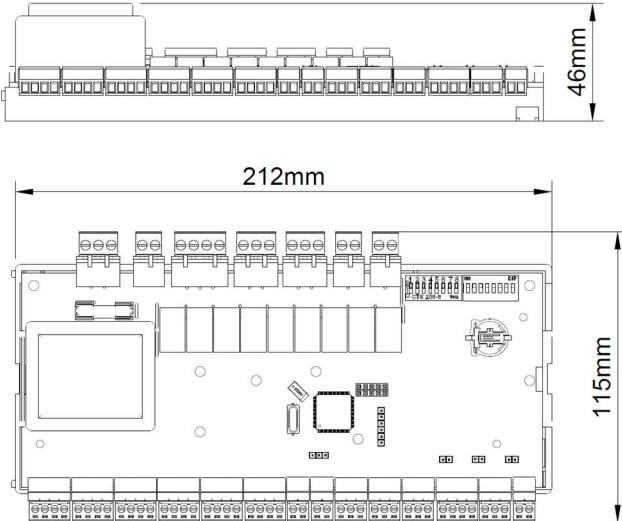
Note: For detailed information about HR510 user manual, service menu, communication parameters and connection diagrams, you can refer to the relevant documents.