

IEC 62056-21 to Modbus converter **ELM-07S Converter Series**

Instruction Manual

ELM-07S is microcontroller-based RS-485 IEC62056-21 (former IEC61107) to **Modbus RS-485 RTU/TCP** converter. ELM-07S is used as a gateway/bridge in building and industrial networks where it is needed to read IEC62056-21 (mainly electricity meters) in Modbus RS-485 RTU based SCADA systems. ELM-07S can connect up to 32 IEC62056-21 devices in its network. It is mounted on standard M36 DIN rail and comes with both Modbus RTU and TCP.

1. General technical data

- max. number of IEC62056-21 devices – 32
- max. number of decoded IEC62056 registers per device – 64
- power supply voltage – 165-235 VAC (210-270 VDC)
- max. power consumption < 5 W
- ambient temperature, operating – -20÷+50 °C
- ambient temperature, storage – -50÷+90 °C
- air humidity – 40÷90 %
- dimensions (H/W/D) – 105/107/74 mm
- IP protection class – IP20
- IEC62056 interface
 - 300, 1.2k, 2.4k, 4.8k, **9.6k**, 19.2k, 38.4k, 57.6k, 115.2k bps, 7 bit even
 - 300, 1.2k, 2.4k, 4.8k, 9.6k, **19.2k**, 38.4k, 57.6k, 115.2k bps, 8 bit even
 - TCP/IP 10/100 Mbit, port 502, DHCP-capable
- RS-485 RTU Modbus interface baud rate
 - 300, 1.2k, 2.4k, 4.8k, 9.6k, **19.2k**, 38.4k, 57.6k, 115.2k bps, 8 bit even
- Modbus TCP interface
 - 3 LEDs (on, comm IEC, comm Modbus)
- display
 - 475 g
- weight

2. ELM-07S operation

ELM-07S begins operation immediately after power-up. The sequence is the following:

Initialization mode (0.2-0.3 s)

- In the first 0.2-0.3s the device initializes its internal data structures. LED "on" is lit.
- After 10s ELM-07 starts reading the network of IEC62056-21 devices. All devices to be read should have their addresses preprogrammed in ELM-07S memory. This process is repeated after predefined time.

Normal operation

In normal mode ELM-07 waits predefined period of time and then reads all pre-programmed IEC62056-21 devices. For each device (32 max) there are 128 Modbus registers (4096 registers total). These registers are updated on each device readout. The value of each IEC62056-21 register is split in two Modbus registers. Before reading the IEC62056-21 devices it is needed their ID-addresses and the registers for readout to be programmed in the ELM-07 internal memory. IEC62056-21 devices can be added, deleted, their registers changed any time when device is operational.

The Modbus registers can be accessed any time either on Modbus RTU or TCP, as well as simultaneously via both RTU and TCP.

3. Mounting and electrical connections

ELM-7S should be mounted on standard M36 din-rail. All connections should be made with isolated multi-wire cables with cross section 0.5mm²÷2.5mm². Mounting should be done in industrial enclosure with high IP class. All the connections are shown in the figure and the tables below:

C1 'Power' – 3P terminal block

No	Description
1, 3	Power input L, N
2	Power Grounding input PE

C2 'IEC62056-21' – 5P terminal block

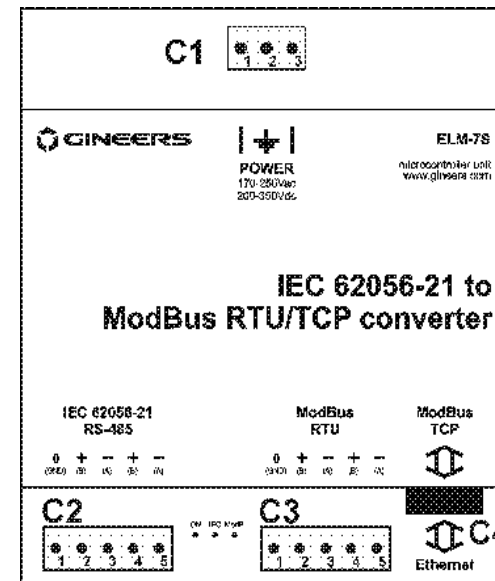
No	Description
1	GND
2,4	RS-458 "+" (B)
3,5	RS-458 "-" (A)

C3 'Modbus RTU' – 5P terminal block

No	Description
1	GND
2,4	RS-458 "+" (B)
3,5	RS-458 "-" (A)

C4 'Modbus TCP' – RJ-45

No	Description
-	RJ-45/TCP Ethernet



4. Warranty

The warranty of the device is limited to 3 years from the date of sale. If the device shows any defect or malfunctions during that period, the manufacturer is obligated to repair the device in its own service for manufacturer's expense, or, if the repair is impossible, to replace the device with new one. The transportation costs to the manufacturer's service are due to the client. The warranty voids if this manual's instructions are not met, warranty seals are removed or the device was opened by unauthorized by the manufacturer personnel.

Serial number:.....

Date of sale:.....

Signature:.....

5. The package contains

- ELM-7S - 1 pcs.
- Instruction manual - 1 pcs.

6. Manufacturer

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