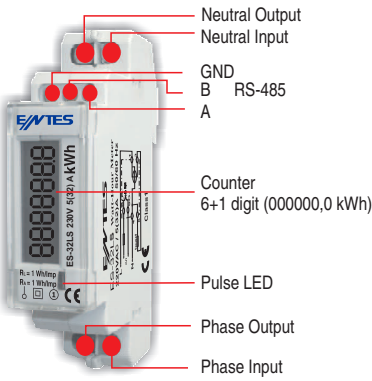
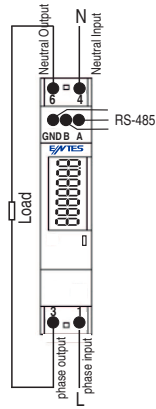


## Front Panel



## Connection Diagram



- By flashing, the LED on the front panel makes it possible to observe whether the measuring is active or not.
- The LCD display on the front panel makes easy and accurate power reading possible.

**Note:** User can not reset index. If the value of index exceed 999999.9, it is resetted automatically and continue to count.

## Watt-Hour Meter with LCD

In today's world, Efficient Power Management is very important for low-cost. Measuring process must have been fulfilled with certain accuracy for precise analysing and measuring the energy. ES-32LS measures the active watt hour consumption directly and error free in single phase systems and it shows the total watt hour consumption. The most important features of the device are its reliability, small size, light weight, modern design, and easy installation.

## Communication

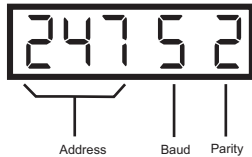
This device has RS-485 communication infrastructure for remote monitoring.

At first start, device displays the screen located below for 1 second. Here;

**First 3 digits** : Shows ModBus register address between 001-247

**5th digit** : Shows communication baudrate as 0=1200, 1=2400, 2=4800, 3=9600, 4=19200, 5=38400

**7th digit** : Shows parity type as 0 = No, 1 = Odd, 2 = Even Parity type. These parameters can be also read and written at the ModBus registers address.



## ModBus register address:

Adres	R/W	Definition	Range	Factory settings
1	R/W	Modbus address	1-247	1-100*
2	R/W	Baud rate	0:1200, 1:2400, 2:4800, 3:9600, 4:19200, 5:38400	3
3	R/W	Parity	0:No, 1:Odd, 2:Even	0
4	R	Index (High 16 bit)(Wh)	0-15258	0
5	R	Index (Low 16 bit)(Wh)	0-65535	0
6	R	Voltage (100xV)	0-65535	-
7	R	Current (mA)	0-65535	-
8	R	Frequency (100xHz)	0-65535	-
9	R	Power Factor (1000x)	0-65535	-
10	R	Active Power (100xkW)	0-65535	-
11	R	Reactive Power (100xkVAr)	0-65535	-
12	R	Apparent Power (100xkVA)	0-65535	-

Index values are shown with this formula

$$\text{Index} = 65536 \times \text{register}[4] + \text{register}[5]$$

## Cautions

- Connect the ES-32LS's terminals as shown in connection diagram.
- ES-32LS does not require any periodical maintenance.
- Installing, repairing and operation should be performed by authorized person.
- Do not open the device. It does not include any parts that can be handled by users.
- Do not use the device out of its purpose.
- Before operating your device, make sure that all connections are made properly.
- Please contact your dealer for any type of service required.
- Entes A.Ş. will not be responsible,
  - if your device fails because of improper installation.
  - if your device fails because of natural disasters (fire, lighting, etc.).
  - if your device fails because of liquid penetration into the device or contact to any liquid for any reason.
  - if the device or its software is interfered for any purposes.
  - if the serial number on the device is damaged.
  - if the device is out of order because of improper and careless use.
  - if the device is out of order defected during transportation out of Entes's responsibility.

## Applications

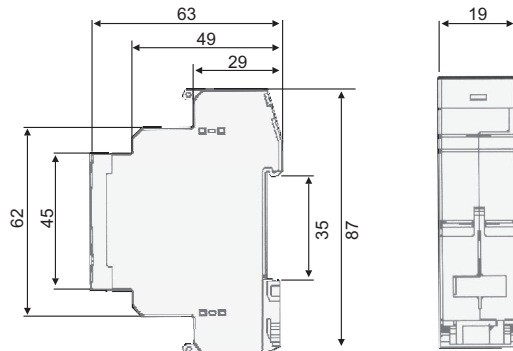
Some applications of ES-32LS are:

- Factories
- Stores
- Schools
- Shopping Malls
- Building Complexes
- Holiday Villages
- Airports
- Hotels
- Marinas
- Railway Stations
- Hospitals
- Industrial Exhibition Halls.

## Technical Specifications

Operating Voltage (Un)	: Please look at labels on the device.
Operating Frequency	: 50/60 Hz.
Rated Current (In)	: 5 A (maximum 32A)
Current Range ( I )	: 0.02-32A
Accuracy	: Class B (EN-50470-1)
Power Consumption	: < 2 VA
Display	: 6+1 digit = 999999.9 kWh
Data retention duration	: > 40 year
Pulse LED	: When the current is more than 0.02A it blinks proportional to the consumed energy.
Communication interface	: RS-485 ModBus RTU
Communication baudrate	: 1200, 2400, 4800, 9600, 19200, 38400
Parity	: No, Odd, Even
ModBus Address	: 1-247
Operating Temperature	: -25 °C .... +55 °C
Storage Temperature	: -40 °C .... +70 °C
Box Protection Class	: IP51
Cable Section	: 4 mm <sup>2</sup>
EMC / Pollution Stability	
Surge Voltage Test	: 4 kV 1.2 / 50 µs. (IEC 1000-4-5)
EFT Test	: 4 kV (IEC 1000-4-4)
Installation	: Standart DIN mount (DIN EN60715)
Weight	: 60 gr. (excluding the packet)

## Dimensions:



**Note:** Should not be used for billing purposes.

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\* The last two digits of the device serial number is used as modbus address factory default value. If the last two digits are "00", 100 is used for device's Modbus address. All devices in the package are placed in order.