

1 Introduction



► This installation manual contains important information regarding the installation of the eTactica Current Meter (models ES-80, ES-200, ES-500), which must be followed.

- Read the entire manual before beginning the installation in order to avoid making mistakes and to reduce the chances of any danger during the installation process.
- Pay attention to the installation instructions and be prepared to look them up during the installation process.

2 Safety Information

This manual contains information which you must observe for your own personal safety and the prevention of injury or damage. Such information is highlighted by the warning triangle shown below.

2.1 Hazard Classification

DANGER

This warning indicates danger with high risk, which if not avoided, can lead to death or serious injuries.

WARNING

This warning indicates danger with medium risk, which if not avoided, can lead to serious or major injuries.

CAREFUL

This warning indicates a lower risk, which if not avoided, can lead to minor or major injuries.

ATTENTION

This warning indicates that there is important information regarding the product or its parts requiring particular attention.

2.2 Installation Information

WARNING

- **Be sure to observe all hazard statements and warnings and cautions.**
- **Read the section entitled "Safety Information" very carefully.**

2.3 Safety Notes

DANGER

Risk of lethal electric shock.

Only low voltage current is present in the connection between the sensors and the Current Meter. However, lethal voltages are present in the live conductors that run through the current sensors.

- Install the Current Meter only in approved cabinets or housings so that the connectors between the sensors and Current Meter are appropriately covered and protected.
- To restrict access by unauthorized persons, the electrical cabinet should be locked, with only authorized persons having access. Turn the power off before installation or maintenance, and provide protection against unintentional power-up during work.
- Install the Current Meter in a dry environment.
- Protect the Current Meter from humidity and moisture.

WARNING

- Always install data and power cables so that they are separated (Refer to DIN EN 50174-2).

ATTENTION

- To prevent damage caused by a power surge, the Current Meter should be protected by a surge arrester (SPD Type 1) and surge protector (SPD Type 2) upstream of the power source.
- Make sure that the power source which supplies the Current Meter with voltage can be switched off easily, for example via a C2 or B6 miniature circuit breaker. This must be marked as the disconnecting device for the power source and be easily accessible.
- No maintenance on the Current Meter is required.

3 Target Group

The activities described in this document may only be carried out by a certified electrician with the following qualifications:

- Training in the installation and commissioning of electrical equipment.
- Safety regulations training in electrical hazards and safety.
- Knowledge of relevant standards and guidelines.

4 Description

Together, the Current Meter and current transformers (CTs) allow the measurement of current flows in AC networks. The measured data is transmitted via an RS485 bus to the Modbus Master. The Modbus Master also provides the supply voltage of 12 V DC to the Current Meter. The Current Meter is offered in three versions which vary depending upon the primary current measurement range (0-80A, 0-200A, 0-500A). Up to six CTs can be connected to a Current Meter (two three-phase circuits or six single-phase circuits). The CTs are placed on the power cables and register the current amperage.

5 Intended Use

The Current Meter must only be used when installed in an appropriately protected cabinet, in a dry indoor space. Install the Current Meter according to the instructions in this manual. Other uses or installation methods may lead to personal injury or damage to property. This includes any modifications to the Current Meter, unless specifically authorized by ReMake Electric ehf. Any other use of the product aside from its intended use, as described in this manual, is deemed to be improper. Unauthorized alterations, modifications, repairs, or opening of the product casing will void the warranty and are prohibited. This manual is a part of the product and must be read, followed, and kept accessible at all times.

6 Disposal

The Current Meter and sensors must not be placed in regular waste disposal.

-  ► Dispose of the Current Meter and sensors in accordance with your local regulations on electronic waste.

7 Contact Information

In case of any technical problems with this product, please contact ReMake Electric ehf at:

ReMake Electric ehf	Tel.: +354 535 3000
Hlidasmara 14	Internet: http://www.etactica.com
211 Kopavogur	Email: info@etactica.com
Iceland	

8 Scope of Delivery

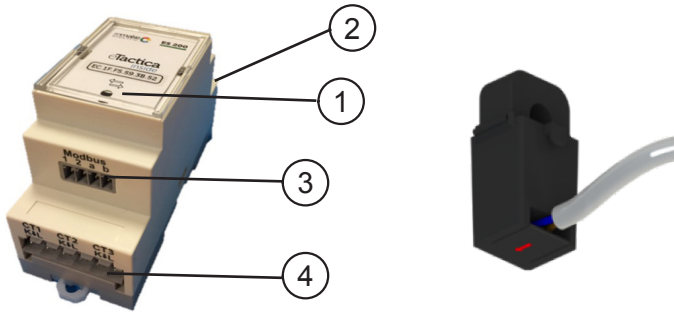


Fig. 1: Scope of delivery of the Current Meter and sensors (example: ES-200).

	Designation	Article nr.	Quantity
1	Current Meter by type: ES-80 (0-80A) ES-200 (0-200A) ES-500 (0-500A)	5060474160339 5060474160346 5060474160353	1
2	Current Transformer: SC-80 SC-200 SC-500	5060474160216 5060474160223 5060474160230	6
3	Molex connector 39500	822350424318	1
4	On Shore connector OSTJJ	OSTTJ040150	6
5	Installation Manual		1

9 Technical Data

Electrical Connections	ES-80	ES-200	ES-500
Supply voltage	12 V DC		
Supply current	Max. 20 mA		
Supply power	Max. 0,5 W		
Nominal voltage/insulation	300 V RMS		
Measurement category	CAT III 300 V		
Rated working voltage	250 V AC		
Rated working current	80A	200A	500A
Maximum current	120A	300A	600A
Rated impulse withstand voltage	4000 V		
Sensor accuracy	±1% of FS @ 25°C		
Operating frequency	50Hz		
Fieldbus			
RS485-cable length	Max. 60 m		
Interface protocol	Modbus/RTU- 19200, 8, E, 1 (default settings)		
Modbus address range	0x01 to 0xF7 (1-247 decimal)		
Modbus cable	4-wire, 2× shielded twisted pair, multi-stranded		
Housing Protection			
Protection rating	IP2X		
Environmental Conditions			
Temperature			
— Storage	-20 °C to 70 °C		
— Operating	-20 °C to 50 °C		
Relative humidity	50 % to 85 %		

10 Installation

⚠ DANGER

Risk of lethal electrical shock

- ▶ Turn power off before commencing the installation or maintenance work and provide protection against unintentional power-up during work.
- ▶ Ensure that no voltage is being supplied to the conductors.

10.1 Installation Information

To install the Current Meter you will need the following:

- ▶ An insulated screwdriver.
- ▶ Modbus cable.
- ▶ Cable ties
- ▶ Cable for CT.

Snap the ES onto the DIN bar (it requires a space of 2 units).

10.2 Installing Current Transformers

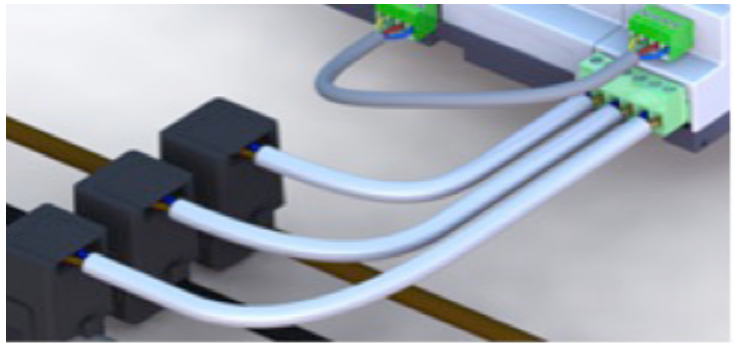


Fig. 2: Installing Current Transformers

- ▶ Connect the wires to the CT output terminals and the connector to the other end. Note that the polarity markings on the CT, indicated by 'k' and 'l', should match the 'k' and 'l' markings on the ES-xxx.
- ▶ Clamp the current transformers on to the conductors (Fig. 2). Note the polarity of the CT; the arrow on the CT should point towards the load.
- ▶ Fasten the CT to the power cable with cable ties by using the tabs on the CT (Fig. 2).
- ▶ Plug the cable into connectors on the Current Meter (pos. 2 and 4 in Fig. 1)

10.3 Connecting the Current Meter with the Modbus Master

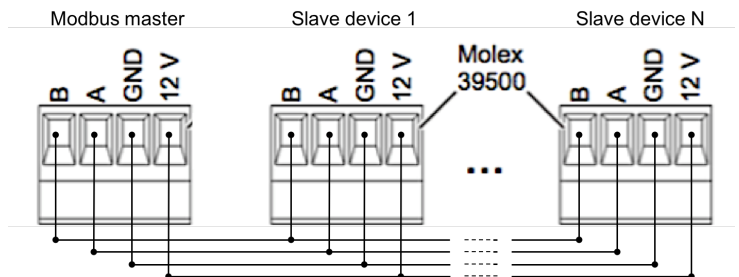


Fig. 3: Wiring the Current Meter to the Modbus Master

- ▶ Prepare the device cable (Fig. 3 shows the pin assignment).
- ▶ The devices should be arranged in a daisy chain (with no branches or loops), with the Modbus master at one end and it is recommended that it should terminate with a 120 Ohm resistor between the A and B terminals on the last device in the chain.
- ▶ Connect the cable to the Current Meter (pos. 3 in Fig. 1).

10.4 Modbus address

The last two digits of the serial number are the Modbus address (in hexadecimal). Each Current Meter has a Modbus address ranging between 0x01 and 0xF7 (1-247 decimal).

ATTENTION

Eliminate duplicate addresses

- ▶ Note that all devices connected in series to a Modbus Master must have unique Modbus address.

10.5 LED Status Indication

A LED light (pos.1 in Fig. 1) indicates the status according to the following:

LED Pattern	Description
Blinking - 1 sec interval	The Current Meter is working as expected and is collecting and sending data
No blinking - always on	The Current Meter is powered, but not receiving modbus requests. Possible causes: 1) RS485 is not wired correctly 2) The modbus master has not sent a request for at least 30 seconds.
No light - LED is off	The Current Meter is not powered. Check the wiring.