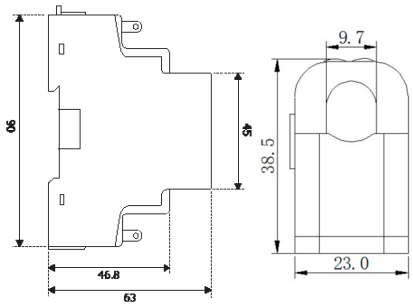
N1-CT
User manual
V1.03

1.Check the meter. Only mount a meter without damage.

NOTE: The housing is sealed, do not open the meter!
No warranty if the housing is opened or the seal is removed.

This meter is delivered without protection covers for wiring.



2.Dimensions

Height	92 mm
Width	18,5 mm
Depth	63 mm
Weight	0,119 Kg

This meter has a current transformer (CT) to measure the direct current (DC). The CT cannot be replaced with another CT.

3.Safety precautions

Caution

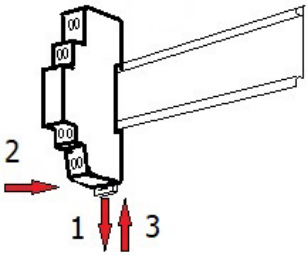
- Turn off and if possible lock all sources supplying the energy meter and the equipment that is connected to it before working on it.
- Always use a properly rated voltage sensing device to confirm that power is off.
- The connecting wire, connecting the device to the outside circuit, should be sized in accordance with local regulations for the maximum amount of the current breaker or other overcurrent protection devices used in the circuit.
- An external switch or a circuit-breaker should be installed on the supply wires, which will be used to disconnect the meter and the device supplying energy. It is recommended that this switch or circuit-breaker is placed near the meter because that is more convenient for the operator. The switch or circuit-breaker should comply with the specifications of the building's electrical design and all local regulations.
- An external fuse or thermal cut-off used as an overcurrent protection device for the meter must be installed on the supply side wires. It's recommended that this protection device is also placed near the meter for the convenience of the operator. The overcurrent protection device should comply with the specifications of the building's electrical design and all local regulations.

Warning

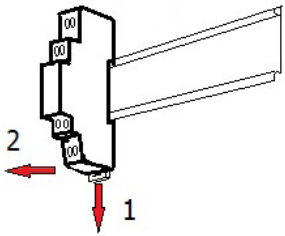
- The installation should be performed by qualified personnel familiar with applicable codes and regulations.
- Use insulated tools to install the device. A fuse, thermal cut-off or single-pole circuit breaker should be fitted on the supply line and not on the neutral line.
- The meter is intended to be installed in a Mechanical Environment 'M1', with Shock and Vibrations of low significance and Electromagnetic Environment 'E2', as per 2014/32/EC Directive. The meter is intended for indoor use. The meter shall be installed inside a suitable IP rated enclosure, in accordance with local codes and regulations.
- To prevent tampering, an enclosure with a lock or a similar device can be used.
- The meter has to be installed against a fire resistant wall.
- The meter has to be installed in a well-ventilated and dry place.
- The meter has to be installed in a protective box if the meter is exposed to dust or other contaminants.
- The meter can be installed and used after being tested and can be sealed afterwards.
- The device can be installed on a 35mm DIN rail.
- The meter should be installed on a location where the meter can be read easily.
- In case the meter is installed in an area with frequent surges for example due to thunderstorms, welding machines, inverters etc., the meter is required to be protected with a Surge Protection Device.
- The device should be sealed immediately after installing it in order to prevent tampering.

This user manual does not contain every applicable safety regulation for using this meter. Also it might be required because of company, local governement regulations or (inter)national laws to take additional measures. This user manual can be found at www.ineprometering.com. We have checked the contents of this manual and every effort has been made to ensure that the descriptions are as accurate as possible. However, deviations from the description cannot be completely ruled out, so that no liability can be accepted for any errors or omissions in the information given. Versions might be different in default programming based on the customers order.

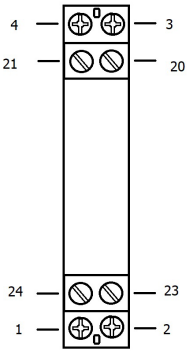
4.Mounting the N1 CT on the DIN-rail



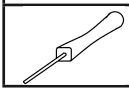
5.Dismounting the N1 CT



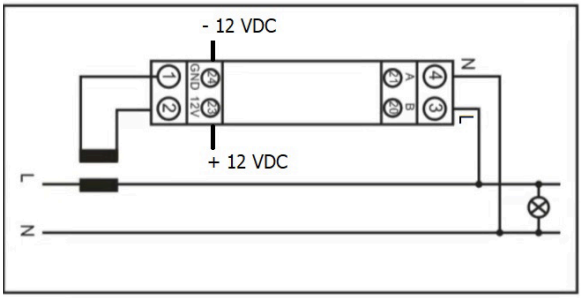
6.Description N1 CT-meter



1	L-in (AC)
2	L-out (AC)
3	L
4	N
20	Modbus +
21	Modbus -
23	12 VDC+
24	12 VDC -

Subject	connection number	
	1,2,3,4	20, 21, 23, 24
	4mmØ 12,56mm2	2mmØ 3,14mm2
	M3	M2
	0,4 Nm	0,3 Nm

7.Connection diagram (1 phase/ 2 wires)



The data from the N1-CT meter can be read with a Modbus based reading program. The wire connection is on point 20 (B) and 21 (A). If no output is measured, please check if all wires are placed on the correct positive or negative side.

8.Specifications

Nominal voltage (Un)	230V
Operational voltage	207V - 253V
Input power supply	12VDC, 100mA
Primary current (Imax)	80A (CT)
Secondary current	40mA
Operational current range	0,4%Ib-Imax = 0,16mA - 80A
Operational frequency range	50Hz
Internal power consumption	≤2W/Phase - ≤10VA/Phase (active - reactive)
Operating temperature	-20°C - +55°C
Accuracy class	1
Communication	Modbus RTU - RS485
Modbus ID	001 - 247, default is 001
Modbus baud rate	9600 / 19200, default is 9600
Modbus parity	Even / None / Odd, default is even
Combination code total energy	01: forward only (default) / 04: reverse only / 05: forward + reverse / 06: reverse - forward / 10: forward - reverse / 11: forward - reverse

Certificate

inepro®

We,

Inepro Metering BV

(supplier's name)

Pondweg 7
2153 PK Nieuw-Vennep
The Netherlands

(supplier's address)

declare under our sole responsibility that the product:

N1-CT

Single phase DIN rail Watt Hour meter

(Name, type or model, batch or serial number, possibly source and number of items)

to which this declaration relates in conformity with the following European harmonized and published standards at date of this declaration:

EN 62368-1:2014+A11:2017
EN 62053-23:2003+A1:2017
EN62052-11:2003+A1 :2017
EN62053-21:2003+A1 :2017

(Title and or number and date of issue of the applied standard(s))

Following the provisions of the Directives (if applicable):

☑ N/A

Nieuw-Vennep, 2021, March 2nd

Place and date of issue

D. van der Vaart

Name of responsible for CE-marking

This declaration of Conformity is suitable to the European Standard EN 45014 General Criteria for Supplier's Declaration of Conformity. The basis for the criteria has been found in international documentation, particularly in ISO / IEC, Guide 22, 1982, Information on manufacturer's Declaration of Conformity with standards or other technical specifications

9.Modbus file

Register	Content	Length	Unit	Data type	Function code	Read / write	Unit
4000	Serial number	2	signed	convert to HEX	03	Read	-
4002	Meter code	1	signed	convert to HEX	03	Read	-
4003	Meter ID (Mbus/Modbus)	1	signed	convert to HEX	03	Read	-
4003	Meter ID (Mbus/Modbus)	1	signed	convert to HEX	06	Write	-
4004	Baud Rate	1	signed	no need to convert	03	Read	-
4004	Baud Rate	1	signed	no need to convert	06	Write	-
4005	Protocol Version	2	Float - Big Endian (ABCD)	convert HEX to Float	03	Read	-
4007	Software Version	2	Float - Big Endian (ABCD)	convert HEX to Float	03	Read	-
4009	Hardware Version	2	Float - Big Endian (ABCD)	convert HEX to Float	03	Read	-
400B	Meter Amps	2	signed	no need to convert	03	Read	A
4011	Parity setting	1	signed	no need to convert	03	Read	-
4011	Parity setting	1	signed	no need to convert	06	Write	-
401B	Software version (CRC)	2	signed	convert to HEX	03	Read	-
400F	Combination code	1	Signed	no need to convert	03	Read	-
400F	Combination code	1	Signed	no need to convert	06	Write	-
5000	Voltage	2	Float - Big Endian (ABCD)	convert HEX to Float	03	Read	V
5002	L1 Voltage	2	Float - Big Endian (ABCD)	convert HEX to Float	03	Read	V
5008	Grid Frequency	2	Float - Big Endian (ABCD)	convert HEX to Float	03	Read	Hz
500A	Current	2	Float - Big Endian (ABCD)	convert HEX to Float	03	Read	A
500C	L1 Current	2	Float - Big Endian (ABCD)	convert HEX to Float	03	Read	A
5012	Total Active Power	2	Float - Big Endian (ABCD)	convert HEX to Float	03	Read	kW
5014	L1 Active Power	2	Float - Big Endian (ABCD)	convert HEX to Float	03	Read	kW
501A	Total reactive power	2	Float - Big Endian (ABCD)	convert HEX to Float	03	Read	kVAR
501C	L1 reactive power	2	Float - Big Endian (ABCD)	convert HEX to Float	03	Read	kVAR
5022	Total Apparent Power	2	Float - Big Endian (ABCD)	convert HEX to Float	03	Read	KVA
5024	L1 Apparent Power	2	Float - Big Endian (ABCD)	convert HEX to Float	03	Read	KVA
502A	Power Factor	2	Float - Big Endian (ABCD)	convert HEX to Float	03	Read	-
502C	L1 Power Factor	2	Float - Big Endian (ABCD)	convert HEX to Float	03	Read	-
6000	Total Active Energy	2	Float - Big Endian (ABCD)	convert HEX to Float	03	Read	kWh
6006	L1 active Energy	2	Float - Big Endian (ABCD)	convert HEX to Float	03	Read	kWh
600C	Forward Active Energy	2	Float - Big Endian (ABCD)	convert HEX to Float	03	Read	kWh
6018	Reverse Active Energy	2	Float - Big Endian (ABCD)	convert HEX to Float	03	Read	kWh