

## SDM120CT-MOD-MID-KIT-100A/100mA

*Single-Phase Multifunction DIN Rail Meter (CT Operated)*



- Measures kWh, kVArh, KW, kVA, PF, Hz, dmd, V, A, etc.
- Bi-directional measurement IMP & EXP
- Two pulse outputs
- RS485 Modbus
- Din rail 35mm
- 100A/100mA/ CT connection

***User Manual V1.1***

## Risk Reduction

### Information for Your Own Safety

This manual does not contain all of the safety measures operating the equipment (module, device) for different conditions and requirements. However, it does contain information which you must know for your own safety and to avoid damages. These information are highlighted by a warning triangle indicating the degree of potential danger.



#### Warning

This means that failure to observe the instruction can result in death, serious injury or considerable material damage.



#### Caution

This means hazard of electric shock and failure to take the necessary safety precautions will result in death, serious injury or considerable material damage.

### Qualified personnel

Operation of the equipment (module, device) described in this manual may only be performed by qualified personnel. Qualified personnel in this manual means person who are authorized to commission, start up, ground and label devices, systems and circuits according to safety and Regulatory standards.

### Proper handling

The prerequisites for perfect, reliable operation of the product are proper transport, proper storage, installation and proper operation and maintenance. When operating electrical equipment, parts of this equipment automatically carry dangerous voltages. Improper handling can therefore result in serious injuries or material damage.

- ✧ Use only insulating tools.
- ✧ Do not connect while circuit is live (hot).
- ✧ Do not connect the meter to a 3 phase - 400VAC – network.
- ✧ Place the meter only in dry surroundings.
- ✧ Do not mount the meter in an explosive area or expose the meter to dust, mildew and insects.
- ✧ Make sure the wires are suitable for the maximum current of this meter.
- ✧ Make sure the AC wires are connected correctly before activating the current/voltage to the meter.
- ✧ Do not touch the meter connecting clamps directly with metal, blank wire and your bare hands as you may get electrical shock.
- ✧ Make sure the protection cover is placed after installation.
- ✧ Installation, maintenance and reparation should only be done by qualified personnel.
- ✧ Never break the seals and open the front cover as this might influence the function of the meter, and will cause no warranty.
- ✧ Do not drop, or allow strong physical impact on the meter as the high precisely components inside may be damaged.
- ✧ Designed to be mounted inside of switchboards or cabinet on DIN RAIL

- ✧ This device must have a suitable sized Circuit Breaker feeding the Multi Function Energy Meter so it does not exceed the maximum rated current.
- ✧ The supply wiring of this device shall be suitable sized cable to match the installed circuit breaker.
- ✧ A Disconnection Device (Circuit Breaker) should be installed close to the Multi Function Energy Meter.
- ✧ The Disconnection Device shall be marked as the Disconnection Device for the Multi Function Energy Meter

#### Disclaimer

We have checked the contents of this publication 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 contained in the information given. The data in this manual is checked regularly and the necessary corrections are included in subsequent editions. We are grateful for any improvements that you suggest.

#### Application

The energy-meters “with a blue back-lighted LCD screen for prefect reading” are used to measure single-phase like residential, Utility and Industrial application. The unit measures and displays various important electrical parameters, and provide a communication port for remote reading and monitoring. Bi-directional energy measurement makes the unit a good choice for solar PV energy metering.

## PART 1 Specification

#### Model List

Model	Input
SDM120CT/ESCT-TA16-100A	100mA CT input

#### General Specifications

Voltage AC (Un)	230V
Voltage Range	176~276V AC
Base Current (Ib)	100mA
Power consumption	<1W/10VA
Frequency	50/ 60Hz(±10%)

AC voltage withstand	4KV for 1 minute
Impulse voltage withstand	6KV-1.2uS waveform
Overcurrent withstand	20I <sub>max</sub> for 0.5s
Pulse output 1	1000imp/kWh (default)
Pulse output 2	0.001(default) /0.01/0.1/1 kWh/kVA <sub>rh</sub> (configurable)
Display	LCD with white backlit
Max. Reading	999999kWh

### Accuracy

Voltage	0.5% of range maximum
Current	0.5% of nominal
Frequency	0.2% of mid-frequency
Power factor	1% of Unity
Active power	1% of range maximum
Reactive power	1% of range maximum
Apparent power	1% of range maximum
Active energy	Class 1 IEC62053-21

### Environment

Operating temperature	-40℃ to +70℃
Storage and transportation temperature	-40℃ to +70℃
Reference temperature	23℃ ± 2℃
Relative humidity	0 to 95%, non-condensing
Altitude	up to 2000m
Warm up time	3s
Installation category	CAT II
Mechanical Environment	M1
Electromagnetic environment	E2
Degree of pollution	2

### Output

#### Pulse Output

The meter provides two pulse outputs. Both pulse outputs are passive type.

Pulse output 1 is configurable. The pulse output can be set to generate pulses to represent total /import/ export kWh or kVA<sub>rh</sub>.

The pulse constant can be set to generate 1 pulse per: 0.001(default) /0.01/0.1/1 kWh/kVA<sub>rh</sub>.

Pulse width: 200/100/60ms

Pulse output 2 is non-configurable. It is fixed to total kWh. The constant is 1000imp/kWh.

#### RS485 output for Modbus RTU

Zhejiang Eastron Electronic Co.,Ltd. Tel: 0086-573-83698881 Fax: 0086-573-83698883  
Address: No.1369 Chengnan Road, Jiaxing, Zhejiang, 314001, China. Web: [www.eastron.com.cn](http://www.eastron.com.cn) Email: [sales@eastrongroup.com](mailto:sales@eastrongroup.com)

The meter provides a RS485 port for remote communication. Modbus RTU is the protocol applied. For Modbus RTU, the following RS485 communication parameters can be configured by the Modbus command.

**Baud rate:** 1200, 2400, 4800, 9600 bps. Default: 9600 bps

**Parity:** NONE/EVEN/ODD

**Stop bits:** 1 or 2

**Modbus Address:** 1 to 247



Mechanics

Din rail dimensions	18x118x64 (WxHxD) DIN 43880
Mounting	DIN rail 35mm
Ingress protection	IP51 (indoor)
Material	self-extinguishing UL94V-0

PART 2 Operation

Initialization Display

When it is powered on, the meter will initialize and do self-checking.

1		Full Screen It will last for 3 seconds.
2		Software version in kind prevail It will last for 3 seconds.

After the self-checking program, the meter display will show the total active energy (kWh)








Scroll Display by Button






There is a button on the front of the meter. After initialization and self-checking program, the meter displays the measured values. The default page is total kWh. If the user wants to check other information, then the button must be pressed to scroll.



Click the button, the LCD display will scroll the measurements.

Keep pressing the button for 3 seconds, the meter will get into set-up mode.

1		Total active energy (kWh) Display format: 0000.00→9999.99→10000.0→99999.9→000000→999999→0000.00
2		Import active energy (kWh) Display format: 0000.00→9999.99→10000.0→99999.9→000000→999999→0000.00
3		Export active energy (kWh) Display format: 0000.00→9999.99→10000.0→99999.9→000000→999999→0000.00
4		Voltage (V)
5		Current (A)
6		Active power (W)
7		Frequency ( F )

8		Power factor ( PF)
9		Modbus address ( ID) Default: 001
10		Baud rate Default : 9600bps
11		Parity None/even/odd are optional Default: none
12		CT1 Primary current 100A
13		Software Version in kind prevail

Note: Secondary voltage input is non-configurable, default value equals to meter input sepc.

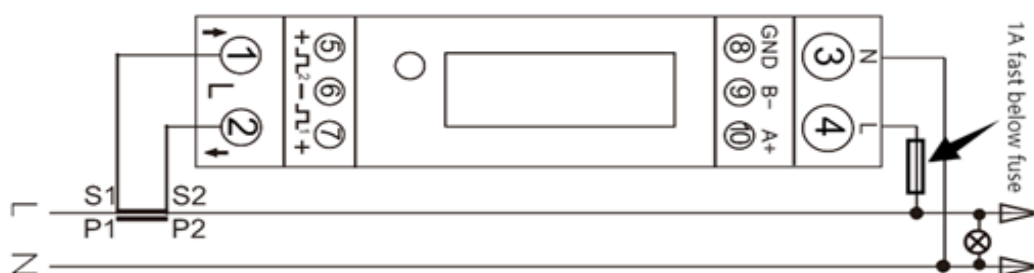
### Set-up Mode

To get into Set-up Mode, the user need keep pressing the button for 3 seconds, the meter LCD will shows “-SET-”.

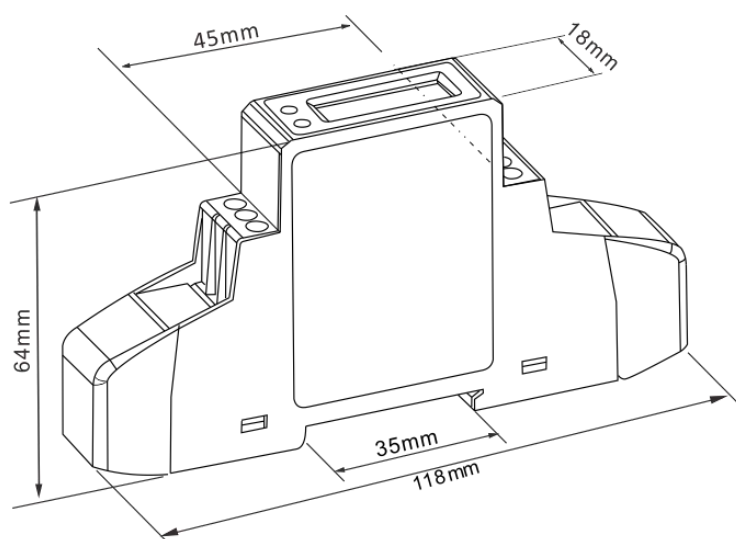


The user can program the meter parameters by sending correct command via RS485 port.  
The protocol is Modbus RTU. For the details. Please look at the "Eastron SDM120CT protocol".

### Wiring Diagram

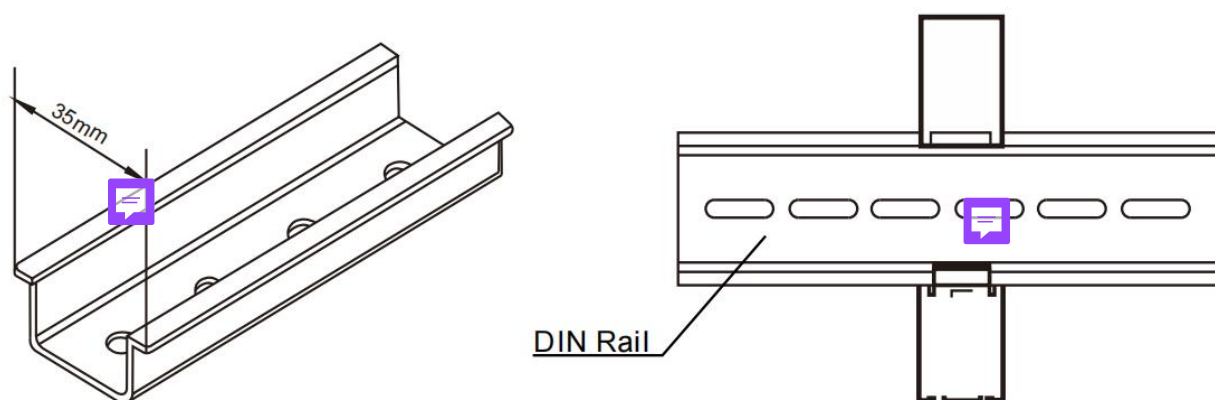


### Dimensions

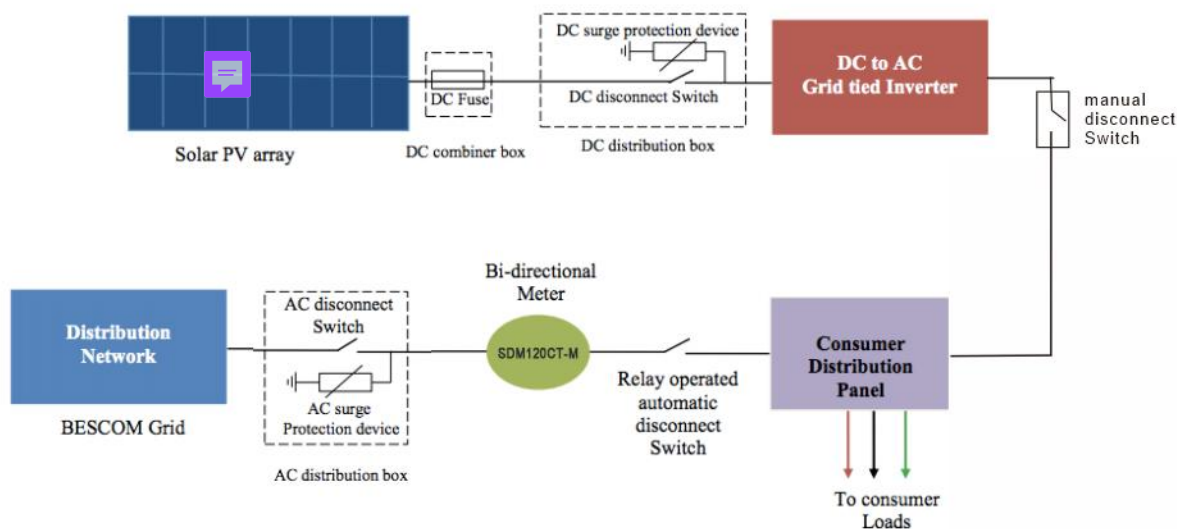




## Installation



## Mounting for solar PV use



## PART 3 Current Transformer

ESCT-TA16-100A

TA Series: 100mA output

Single phase split core current transformer

