

SDM530D

THREE PHASE FOUR WIRE ENERGY METER WITH S0 PULSE OUTPUT
(SEVEN MODULE)



User manual

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1.1 Safety instructions

Information for Your Own Safety

This manual does not contain all of the safety measures for operation of the equipment (module, device), because special operating conditions, and local code requirements or regulations may necessitate further measures. However, it does contain information which must be read for your personal safety and to avoid material damages. This information is highlighted by a warning triangle and is represented as follows, depending on 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.

Use for the intended purpose

The equipment (device, module) may only be used for the application specified in the catalogue and the user manual, and only be connected with devices and components recommended and approved by Eastron Electronic.

Proper handling

The prerequisites for perfect, reliable operation of the product are proper transport, proper storage, installation and assembly, as well as proper operation and maintenance. When operating electrical equipment, certain 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).
- ✧ 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 used 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 your bare hands, with metal, blank wire or other material as you may get an 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 functionality of the meter, and will avoid any warranty.
- ✧ Do not drop, or allow physical impact to the meter as there are high precision components inside that may break.

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.

Subject to technical modifications without notice.**Copyright**

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1.2 Foreword

the Eastron SDM530D DIN rail three phase four wire energy meter. The Eastron SDM530D energy meter is the most advanced type electronic kWh meter available at the market. With the Eastron product range we have introduced a large scale of energy meters on the market suitable for 110V AC to 400V AC (50 or 60Hz).

The Eastron SDM530D has two versions, direct connection version and CT connection version. The direct connection version SDM530D can be connected to load up to 100A. While the SDM530D CT version shall be connected with 5A secondary output current transformer. The CT ratio can be programmable via the buttons on the front panel.

The meter adopts big size LCD display with a highlight blue color backlit. The backlit has 3 modes (always on, always off, on for 30seconds after each button click) programmable from the front button.

With high accuracy and long lifespan design, the SDM530D is a perfect option for any three phase applications. 18 month quality warranty is offered, Eastron is responsible for replacement of any failure meters, which caused by production or design mistake.

1.3 Performance criteria

Operating humidity	≤ 85%
Storage humidity	≤ 95%
Operating temperature	-10°C-+50°C
Storage temperature	-30°C-+70°C
International standard	IEC 62053-21
Accuracy class	1
Protection against penetration of dust and water	IP51
Insulating encased meter of protective class	II

1.4 Specifications

Meter type	SDM530D SDM530D CT
Nominal voltage (Un)	230/400V AC (3~)
Operational voltage	176/264 – 304/456V AC (3~)
Insulation capabilities - AC voltage withstand - Impulse voltage withstand	4KV for 1 minute 6KV – 1.2μS waveform
Basic current (Ib) Directly connect CT connect	10A 5A
Maximum rated current (Imax) Directly connect CT connect	100A 6A
Operational current range	0.4% Ib- Imax
Over current withstand	30Imax for 0.01s
Operational frequency range	50Hz ±10%
Internal power consumption	≤2W / 10VA per phase
Test output flash rate (PULSE LED) Directly connect CT connect	400imp/kWh 1600imp/kWh
Test pulse output rate (pins 8 & 9) Directly connect CT connect	400imp/kWh 1600imp/kWh
Power missing indicator (Phase A,B & C LED)	the LED will burning if the phase power is missing.
Consumption indicator (PULSE & SO LED)	Flashing at load running

1.5 Basic errors

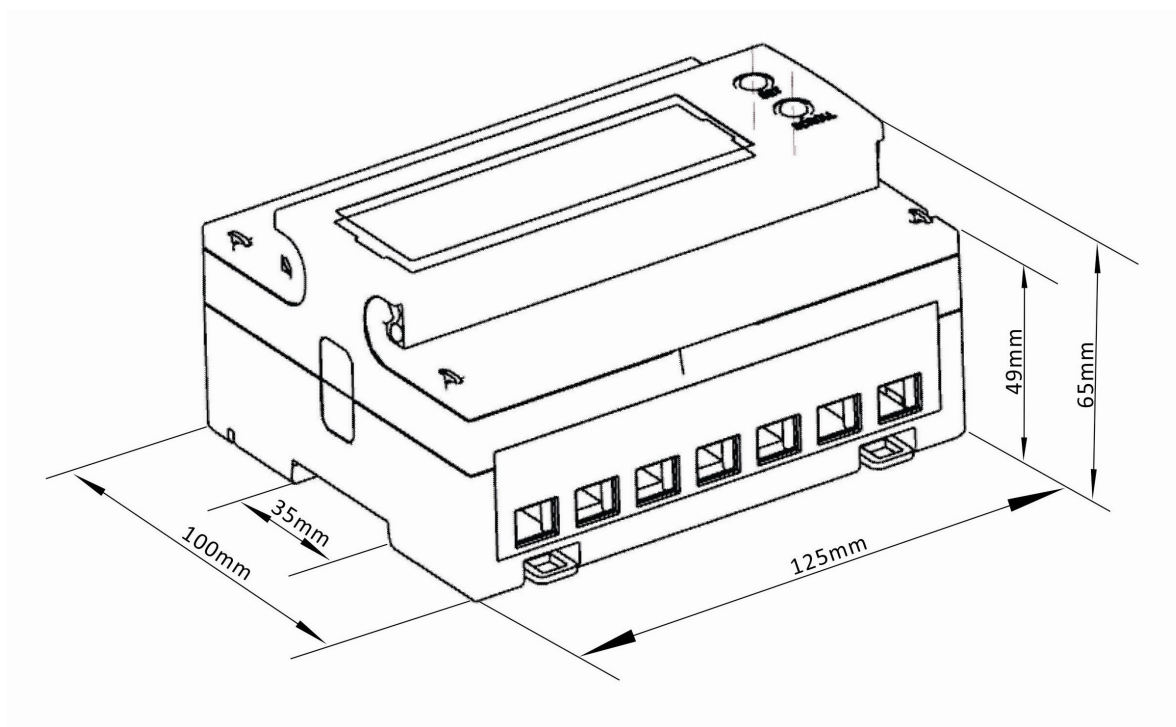
With balanced loads

0.05Ib	Cosφ = 1	±1.5%
0.1Ib	Cosφ = 0.5L	±1.5%
	Cosφ = 0.8C	±1.5%
0.1Ib - Imax	Cosφ = 1	±1.0%
0.2Ib - Imax	Cosφ = 0.5L	±1.0%
	Cosφ = 0.8C	±1.0%

With single phase load

0.1Ib - Imax	Cosφ = 1	±2.0%
0.2Ib - Imax	Cosφ = 0.5L	±2.0%

1.6 Dimension



1.7 Installation

CAUTION

- ◆ Turn off all the power before working on it.
- ◆ Always use a properly rated voltage sensing device to confirm that power is off.

WARNING

- ◆ Installation should be performed by qualified personnel familiar with applicable codes and regulations.
- ◆ Use insulating tools to install the meter.
- ◆ Fuse or thermal cut-off or single-pole circuit breaker can't be fitted on the supply line and not the neutral line.

- ✧ We recommend that the connecting wire which is used to connect the meter to the outside circuit should be sized according to local codes and regulations for the capacity of the circuit breaker or over current device used in the circuit.
- ✧ An external switch or a circuit-breaker should be installed on the inlet wire, which will be used as a disconnection device for the meter. And there it is recommended that the switch or circuit-breaker is near the meter so that it is more convenience for the operator. The switch or circuit-breaker should comply with the specifications of the buildings electrical design and all local regulations.
- ✧ An external fuse or thermal cut-off which will be used as a over current protection device for the meter must be installed on the supply side wire, and it is recommended that the over

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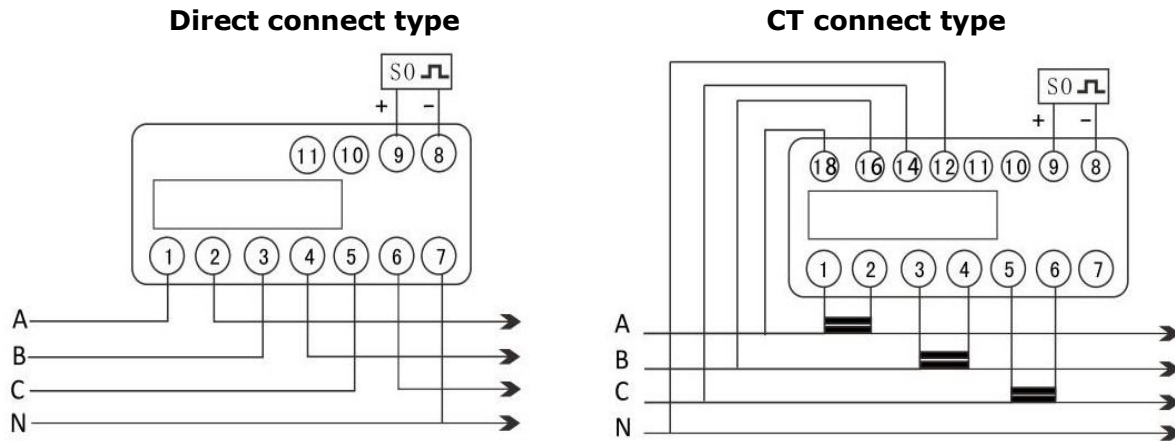
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current protection device is near the meter so that it is more convenience for the operator. The over current protection device should comply with the specifications of the buildings electrical design and all local regulations.

- ✧ This meter can be installed indoor directly, or in a meter box which is waterproof outdoor, subject to local codes and regulations.
- ✧ To prevent tampering, secure the meter with a padlock or a similar device.
- ✧ The meter has to be installed against a wall which is fire resistant.
- ✧ The meter has to be installed in a good ventilated and dry place.
- ✧ The meter has to be installed in a protection box when placed in dangerous or dusty environment.
- ✧ The meter can be installed and used after being tested and sealed with a letter press printing.
- ✧ The meter can be installed on a 35mm DIN rail or direct on a meter board with screws.
- ✧ The meter should be installed in an available height so that it is easy to read.
- ✧ When the meter is installed in an area with frequent surges due to e.q. thunderstorms, welding machines, inverters etc, protect the meter with Surge Protection Devices
- ✧ After finishing installation, the meter must be sealed to prevent tampering.
- ✧ Connection of the wires should be done in accordance with the underneath connection diagram.



1.8 Operating

Consumption indication

On the SDM530D'S front panel, there are four LED, in which three LED are for three phase voltage and another one for impulse. The constant of the impulse is shown on the nameplate of the meter.

Reading the meter

The SDM530D energy meter is equipped with 6+1 or 5+2 LCD display, which is used as recording consumption and can't be reset to zero. The number system is based on units of 10. And unit is kWh. On the front panel, there are two rubber buttons, which are used to scroll down the meter display information.

Pulse output

SDM530D series DIN rail energy meter is equipped with a pulse output which is fully separated from the inside circuit. That generates pulses in proportion to the measured energy. They are test pulse output (pins 8 & 9). Usually, the test pulse output is used as testing accuracy or reading purpose in close quarters.

The test pulse output is a polarity dependant, passive transistor output requiring an external voltage source for correct operation. For this external voltage source, the voltage (Ui) should be 5-27V DC,

and the maximum input current (I_{max}) should be 27mA DC. To connect the impulse output, connect 5-27V DC to connector 9 (anode), and the signal wire (S) to connector 8 (cathode). The meter pulses is indicated on the front panel.

LEDs

There are four LEDs on the front panel, they are marked with A B C and imp/kwh. A B C are phase voltage missing indicators, and imp/kwh is pulse output indicator.

	Yellow	Green	Red
A-phase power	Does not shine	Bright	Bright
B-phase power	Bright	Does not shine	Bright
C-phase power	Bright	Bright	Does not shine
Only AB power	Does not shine	Does not shine	Bright
Only AC power	Does not shine	Bright	Does not shine
ABC together on the power	Does not shine	Does not shine	Does not shine

LCD display

When the meter is power on, the meter will display:



Full screen

2S



Software version 7P 1.0

5S



Impulse constant 1600imp/kWh

5S



CT ratio (CT type only)

5S



Accumulated used energy

If the CT ratio is less than 150:5, the LCD display will show 6 integrals plus 1 decimal.
If the CT ratio is set bigger than 150:5, then the LCD will show 7 integrals.

Two button functions:

To set the meter LCD backlight modes, CT ratio and confirm the option.



To scroll the LCD backlit mode and choose CT ratio

Backlit Setting

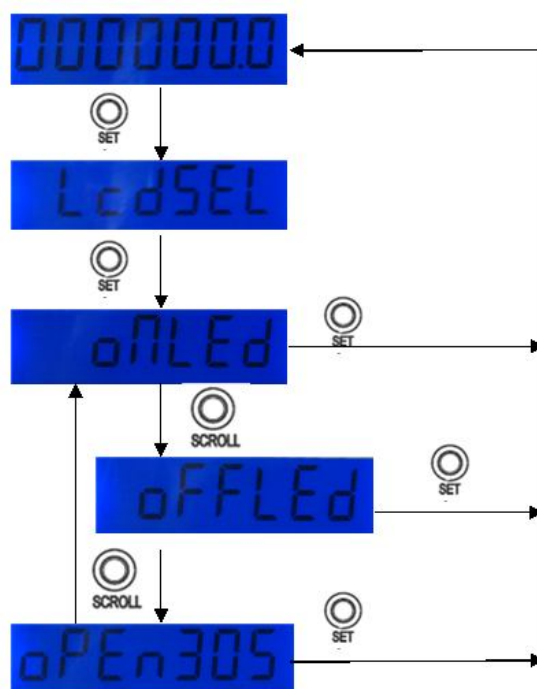
SDM530D is equipped with highlight blue color backlit, which provide a clear view of reading when the meter is installed in a dark condition.

There are three modes optional:

ONLED: the backlit always on

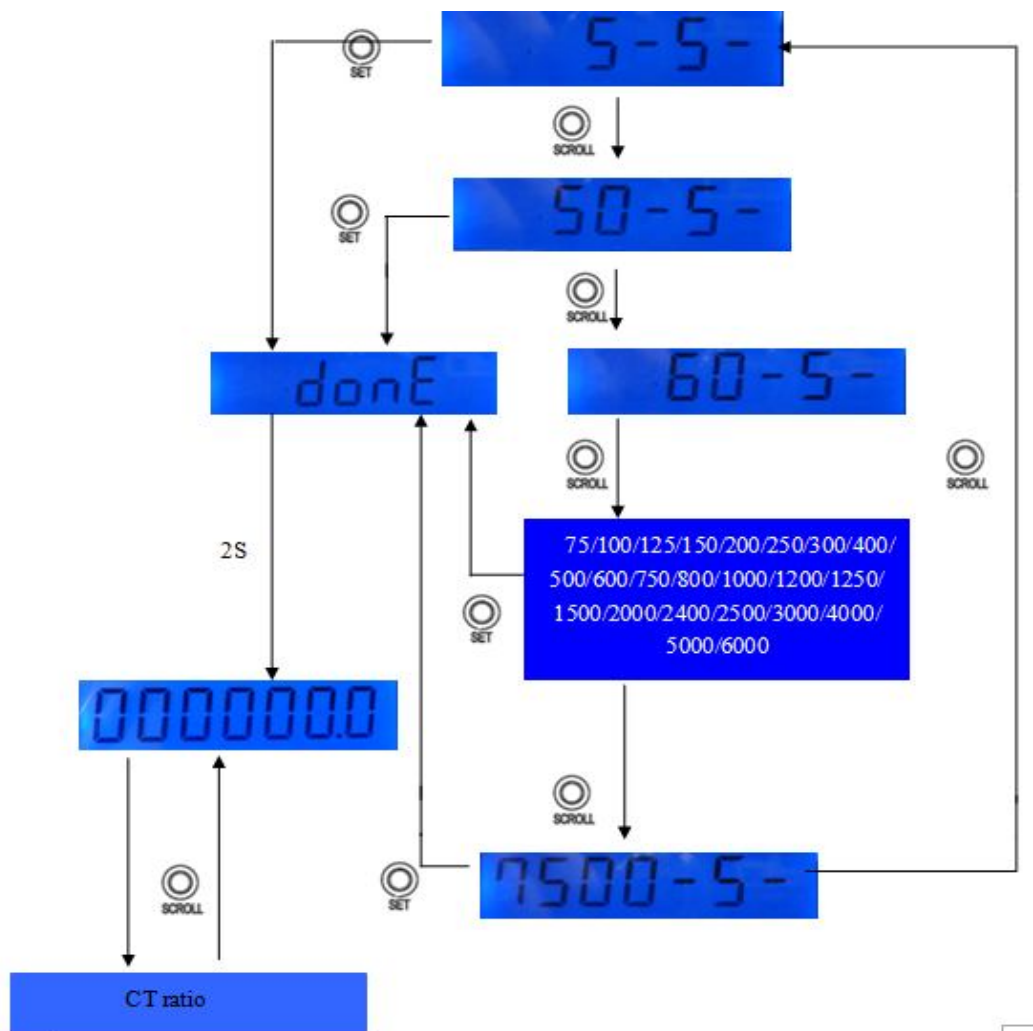
OFFLED: the backlit always off

OPEN30S: the backlit will turn on after each click of button



1.9 CT Ratio setting (SDM530D CT only)

The SDM530D CT measure the secondary energy consumption via external current transformer. If the user wants to read the primary energy reading, he can program the CT ratio to the meter by the front buttons. The meter has 27 pre-set and common CT ratios optional to the user.



1.10 Technical support

If you have any questions, please contact

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