**LoRa ENERGY METER FOR SINGLE AND THREE PHASE ELECTRICAL SYSTEMS**

**1. Introduction**

This document provides operating, maintenance and installation instructions. This unit measures and displays the characteristics of single phase two wires (3/2), three phase three wires (3/3w), three phase four wires (3/4w) networks. The measuring parameters include voltage(V), frequency(f), current(I), power(KW/kVar), kVA(kWatt-hour), energy (KWh/kVArh), maximum demand, and many other parameters. This unit measures Maximum demand current and power, this is measured over period intervals of 5 minutes.

**1.1 Unit Characteristics**

The unit can measure and display:
- Voltage (L1/L2/L3) of all phases.
- THDs % of each phase (total harmonic distortion).
- Currents of each phase and Neutral (L1/L2/L3).
- Frequency (L1/L2/L3).
- Phase sequence.
- Power, maximum power demand and power factor.
- Active energy imported and exported.
- Reactive energy imported and exported.
- Power factor of each phase.
- Active and reactive power.
- Instantaneous voltage (V).
- Instantaneous active power (KWh).
- Instantaneous reactive power (KVAR).
- Instantaneous volt-amps (KVA).
- Maximum power demand.
- Maximum current demand.
- Maximum active energy.
- Maximum reactive energy.
- Maximum active power factor.
- Maximum reactive power factor.
- Maximum volt-amps.
- Maximum voltage.
- Maximum current.
- Maximum power.
- Maximum active power.
- Maximum reactive power.
- Maximum active current.
- Maximum reactive current.
- Maximum active voltage.
- Maximum reactive voltage.
- Maximum active power factor.
- Maximum reactive power factor.
- Maximum volt-amps factor.
- Maximum voltage factor.
- Maximum current factor.
- Maximum power factor.
- Maximum active or reactive.
- Use this section to set up the relay settings.
- Use this section to set up the PT connections.
- Use this section to set up the CT connections.
- Use this section to set up the LoRa settings.
- Use this section to set up the LoRaWAN settings.
- Use this section to set up the pulse output settings.
- Use this section to set up the DIT demand integration time.
- Use this section to set up the password.
- Use this section to set up the system option.
- Use this section to set up the time setting.
- Use this section to set up the measurement screen.
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4.9 Backlit set-up
The meter provides a function to set the blue backlit (lasting time: 0.01/10/60/120 minutes).
Option 0 means the backlit always on here.

Press to confirm the setting and press to return to the main set up menu.

4.10 CLR
The meter provides a function to reset the maximum demand value of current and power.

Press to confirm the setting and press to return to the main set up menu.

5. Specifications

5.1 Measured Parameters
The unit can monitor and display the following parameters of a single phase two wire (1p2w), three phase three wire (3p3w) or three phase four wire (3p4w) system.

5.1.1 Voltage and Current
- Voltage accuracy: 1% of range maximum (0.01)
- Input frequency: 50 or 60 Hz
- Input waveform: Sinusoidal distortion factor < 0.05
- Auxiliary supply voltage: Nominal ±1%
- Auxiliary supply frequency: Nominal ±1%
- Auxiliary supply waveform (AC): Sinusoidal distortion factor < 0.05
- Magnetic field of external origin: Terrestrial flux

5.1.2 Power factor and Frequency and Max. Demand
- Frequency in Hz
- Instantaneous power
- Power 0 to 3600 MV
- Reactive power 0 to 3600 MVA
- Volt-amps 0 to 3600 MVA
- Maximum demanded power since last Demand reset
- Maximum neutral demand current, since the last Demand reset
- Maximum neutral demand current, since the last Demand reset (for three phase supply only)

5.1.3 Energy Measurements
- Import/Export active energy
- Import/Export reactive energy
- Total active energy
- Total reactive energy

5.2 Measured Inputs
Voltage inputs through 4-way fixed connector with 2.5mm² stranded wire capacity. Single phase two wire (1p2w), three phase three wire (3p3w) or three phase four wire (3p4w) unbalanced. Line frequency measured from 11 voltage or 3-phase voltage.

Three current inputs (on physical terminals) with 2.5mm² stranded wire capacity for connection of external CTs. Nominal rated input current 5A or 1A a.c. Rms.

5.3 Accuracy
- Voltage: 0.5% of range maximum
- Current: 0.5% of nominal
- Frequency: 0.2% of mid-frequency
- Power factor: 1% of unity (0.01)
- Active power (W): ±1% of range maximum
- Reactive power (VAR): ±1% of range maximum
- Apparent power (VA): ±1% of range maximum
- Active energy (Wh): Class 1 IEC 62053-21
- Reactive energy (VArh): ±1% of range maximum
- Total harmonic distortion: 1% up to 3rd harmonic
- Response time to step input: 1s, typical, to <90% of final reading, at 50Hz.

5.4 Auxiliary Supply
Two-way fixed connector with 2.5mm² stranded wire capacity. 85 to 275V a.c. 50/60Hz ±10% or 120V to 380V d.c. ±20%. Consumption ≤ 10W

5.5 Pulse Outputs
Two Pulse outputs are provided to indicate real-time energy or Indicated energy. Pulse out 1 is non-configurable with constant 3200imp/kWh.

5.6 Reference Conditions of Influence Quantities
Influence Quantities are variables that affect measurement errors to a minor degree. Accuracy is verified under nominal value within the specified tolerance of these conditions:
- Ambient temperature: 23°C ±1°C
- Input frequency: 50 or 60Hz ±2%
- Input waveform: Sinusoidal distortion factor < 0.05
- Auxiliary supply voltage: Nominal ±1%
- Auxiliary supply frequency: Nominal ±1%
- Auxiliary supply waveform (AC): Sinusoidal distortion factor < 0.05
- Magnetic field of external origin: Terrestrial flux

5.8 Mechanics
- DIN rail dimensions: 72 x 45.5 mm (b/h) per DIN 43880
- Mounting: DIN rail (DIN 43880) a/b/c (stubby)
- Sealing: Material: Self-extinguishing LOV 0

6. Dimensions
- Weight: 96 g (SDM630MCT-Lora series)
- Dimensions: 96 x 96 x 57 mm (b/h/d)
- Installation: Perpendicular to the earth surface

7. Installation
The wiring diagram of SDM630MCT-Lora series has little difference from different models. Please make sure the wiring is correct before turn on power of the meter.

7.1 Current and Voltage Inputs
- Voltage inputs: 4-way fixed connector with 2.5mm² stranded wire capacity. Single phase two wire, three phase three wire or three phase four wire system.
- Current inputs: 2.5mm² stranded wire capacity for connection of external CTs.
- Line frequency measured from 11 voltage or 3-phase voltage.

7.2 Definitions of other terminals
- Relay output 1: 24VDC, 2A, 300VAC max
- Relay output 2: 24VDC, 2A, 300VAC max
- Communication: RS485
- Battery: 3.2V, 1500mAhr

8. Accessories
- Mounting kit: DIN rail kit
- Cables: 3-core, 1.5mm², red, blue, green

9. Supply Codes
- IEC 62053-21
- DIN 43880
- UL 1950

10. Commissioning
- Commissioning procedures
- Commissioning checklist
- Commissioning report

11. Quality Assurance
- Quality management system
- Product life cycle
- Product traceability

12. References
- IEC 62053-21
- DIN 43880
- UL 1950
- EN 50470

13. Service
- Service availability
- Service response time
- Service location

14. Warranty
- Warranty period
- Warranty conditions
- Warranty process

15. Contact Information
- Tel: 86 573 83698881 / 83698882
- Tel: 86 573 83698883
- Web: www.eastron.com.cn
- Mail: sales@eastron.com.cn
- Zhejiang Eastron Electronic Co., Ltd. Building 2, No. 1369 Chengnan Rd., Jiaxing, Zhejiang, China 314001
- Tel: 86 573 83698881 / 83698882
- Web: www.eastron.com.cn

16. Compliance
- EU: CE mark
- UL: E2251202101
- CQC: CQC.01.320002

17. Important Information
- Safety instructions
- Installation guidelines
- Maintenance procedures

18. Environmental Information
- Packaging material
- Recycling
- Disposal

19. Regulatory Information
- Regulatory compliance
- Regulatory reference material

20. Technical Specifications
- Voltage supply: 220 Vac ±10%
- Frequency: 50 or 60 Hz
- Current supply: 220 Vac ±10%
- Power supply: 220 Vac ±10%
- Environmental conditions
- Operating temperature: -25°C to +60°C
- Storage temperature: -40°C to +70°C
- Relative humidity: 0% to 95%
- Vibration: 5 Hz to 50 Hz, IEC 68-2-6, 2g
- Shock: 50g in 3 planes
- Maximum operating and storage temperature are in the context of typical daily and seasonal variation.

21. Additional Information
- User manual
- Technical support
- Customer service

22. Legal Information
- Compliance declaration
- Liability
- Disclaimers

23. Glossary
- Technical terms
- Definitions
- Abbreviations

24. Appendices
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- Appendix B: Commissioning procedures
- Appendix C: Maintenance procedures

25. Acknowledgments
- Contributions of individuals
- Acknowledgments to organizations

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- Product index
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