



ZAPε 1CS Single-phase Multi-function Meter

**Certified Standard
IEC 62053-21**

ε ~ epsilon range ~ energy meters

**Product Description
Operating Instructions
Features and Technical Data
Maintenance Instructions
Diagrams**

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1. FEATURES & APPLICATIONS

Zaptronix's **ZAPε1CS** Multifunction Meter meets the IEC 62053-21 (Class 1) standard for energy meters. The main features of the product are: digital components, digital signal processing, digital filters, digital error correcting, digital calibration, immunity to temperature fluctuation and excellent stability. Due to its overload multiplier (x12), the meter can record extremely low energy usage.

The basic functions of **ZAPε1CS** include data processing units and active bidirectional (import and export) energy.

Available **ZAPε1CS** models:

20 – 100 (A) Constant 500 Range 0 – 999999.9kWh

ZAPε1CS+ has RS485 communications functionality

1.1. PROCESSING FUNCTIONALITY

1.1.1. ENERGY METERING

- Energy measurement using digital measuring chips, metering precision can therefore be digitally verified
- Total energy is counted into the import energy register, i.e. Total = Export + import. There is another group of energy registers for metering Export energy only, this way **ZAPε1CS** can flexibly meter bi-directional energy.
- There is one pulse output which can be used for verifying pulse or data collected by other equipment. The pulse width is 80ms. Energy pulse will be output upon both active import and export energy.
- Pulse indication of energy metering using one bright LED which indicates active energy. (The LED's on time equals to the output width of verifying pulse).

1.1.2. INPUTS & OUTPUTS

- The **ZAPε1CS** has a passive pulse output interface with optical-coupling insulation, and complies with IEC 62053-31
- The **ZAPε1CS** touch-sensitive buttons are waterproof and complies with IP54 standards.

2. OPERATING INSTRUCTIONS

2.1. RUNNING & DISPLAY

2.1.1. OPERATION

Running Mode: In this mode, the **ZAPε1CS** meter automatically displays data at given times, as programmed. When the data processing unit is running, an LED will flash once to indicate that an effective energy pulse is registered, irrespective of which mode it has been set to. The red LED will light up when the meter has been powered up.

2.1.2. DATA DISPLAY

There are three types of data display modes:

- a) Full Screen Display Mode: Temporary mode for about 8 seconds to check the screen
- b) Power Off Display Mode: When the meter loses power supply, the LCD will display current import energy until the meter is powered up again
- c) Automatic Scrolling Display: After full screen display, the **ZAPε1CS** will enter this mode. The display time intervals are 8S. The display is automatic and can be used for routine monitoring

2.2. SETTING CONSTANTS

The **ZAPε1CS**'s constants are fixed and cannot be changed by the user.

2.3. LOSE NEUTRAL WARNING

The **ZAPε1CS** meter will display a warning message when the Phase current >1A and Neutral is connected to earth.

3. SPECIFICATIONS & TECHNICAL DATA

3.1. POWER SUPPLY

Meter type	Current (mA)	Power consumption (VA)	Power (W)
240V (transformer)	<39mA	<10	<08

3.2. PULSE OUTPUT

The pulse output will be a fixed output of 80ms wide control pulses both on active import and export energy. The output is a passive optical coupling.

3.3. EXTERNAL SIZE & WEIGHT

External Size: 120mm x 104mm x 44mm

Weight: 0.4kg

4. USE, TRANSPORTATION & STORAGE CONDITIONS

- The **ZAPε1C** meter is designed for indoor use
- Transportation stacks should not exceed five of the original packages
- Moisture absorbent material must be provided inside the sealed package when storing meters for prolonged periods
- The warranty will be void should the meter be stored in high temperature or high humidity environments for extended periods of time
- The **ZAPε1C** LCD and meter cover are ultra-violet light resistant. However, to improve the LCD's service life, it is recommended that the **ZAPε1C** is not installed in an environment where the meter is exposed to direct sun light.

5. WARRANTY

All Zaptronix products will be repaired or replaced free of charge within 12 months from date of purchase, at the full discretion of Zaptronix Limited. The warranty applies to faulty material and workmanship. The following exclusion to warranty will apply:

1. Abuse of the product through incorrect handling, storage or installation
2. Products installed or de-installed by staff without the suitable qualifications
3. Products exposed to extreme environmental factors such as fire and flooding
4. Electrical damage caused by conditions outside of the IEC standard certified for the meter.
5. The warranty does not cover incidents of a force majeure nature
6. Damage or loss of goods during transit

It is the purchaser's responsibility to ensure its know-how to handle and install the products is complete.

Opening of the meter enclosure will render the warranty invalid. A broken manufacturer's seal will be sufficient proof thereof.

All faulty metes must be returned to Zaptronix Limited in Midrand – see Page 1 for address and contact details.

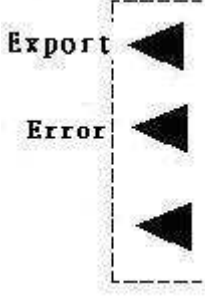
Please refer to the latest on-line brochures for updated details at www.zaptronix.co.za.

6. PLACING ORDERS





Please place all orders with Zaptronix Limited at info@zaptronix.co.za and specify meter type and specifications, as well as communications output (with RS485 or without).

7. APPENDIX A: DISPLAY EXPLANATION

Display content: Full screen

Symbol	Explanation
	<p>When the arrow which point to 'Export' lights up, the meter display will read export energy.</p> <p>When the arrow which points to 'Error' lights up, the current is reversed or earth is lost.</p>
<p>Rx</p> <p>Tx</p>	<p>Rx indicates that the meter is receiving data</p> <p>Tx indicates that the meter is sending data</p>

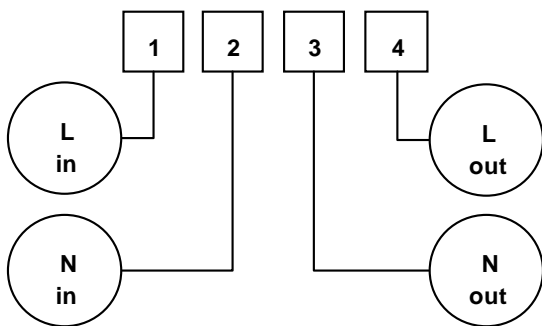
Display Messages

Example	Explanation
	The active import total energy is 0.3 kWh
	Displays Error Code 01
	Displays Error Code 02
	The active export total energy is 75.6 kWh

8. APPENDIX B : ERROR CODES

- 01: Earth Lost
- 02: Current is reversed

9. APPENDIX C: CONNECTION DIAGRAM – DIRECT MODE

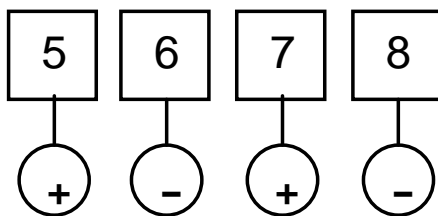


10. APPENDIX D: SIGNAL CONNECTERS

Connecting Diagram

Pulse out

RS485



Indicates that there is 240 V on the circuit board.
Please don't touch the board while it is powering up, even though the circuit is protected.