

SINGLE PHASE ELECTRONIC ELECTRICITY METER

Meters of the latest generation, one tariff or multi-tariff, multifunctional active energy metering in 4 quadrants, class A or B (EN 50470 - 1, 3) record of the maximum power communication possibilities (SR EN 62056-21).

CSM0203 is a single-phase static meter designed to measure active electrical energy for residential consumers and commercial agents which use one or two tariffs for electrical energy billing in single-phase low voltage networks.

TECHNICAL CHARACTERISTICS

- Static single-phase electricity meter for active energy, one or two tariffs
- Working voltage range: 0,8 - 1,15 U_n , with a rated voltage U_n of 230 V
- Current operating range: 0,25 - 5 (80) A
- Minimum current (I_{min}): 0.25A
- Reference current (I_{ref}): 5A
- Maximum current (I_{max}): less than or equal to 80A, but less than 25A ($= 5 * I_{ref}$)
- Network rated frequency: 50 Hz
- Meter constant: 1000, 4000 or 10000 impulses / kWh.
- The SO (pulse output) constant meter: 100, 200, 500, 1000.
- Imports the active energy index register (| W + |)
- Energy Index Register from Tariff 1 (| W + |)
- Energy Index Register to Tariff 2 (| W + |)
- Register of the energy export index (| W - |)
- Accuracy Class A or B (according to EN 50470-3)

Climatic characteristics:

- Operating temperature range: -40...+70°C
- Temperature of transport and storage: -40...+80°C

Functional characteristics

- Recording of operating events: total operating time, operating time of tariff registers, date and time of the last parameter setting, date and time of the last reading
- Calendar clock with daylight saving time
- Special test mode in which energy registers are displayed with 3 decimal places
- Switching the tariff by external command on terminal 13.

Operating modes

- Normal mode: there is network voltage, the meter performs the desired functionality, the most important being the accumulation of active energy. In this mode, the LCD display shows the configured display sequence and the communication protocol functions of the operating mode are available depending on the state of the switch under the terminal block cover.
- Battery mode: there is no network voltage, the main functions are deactivated, except for the calendar clock.
- Error mode: The meter enters this mode after a fatal error has been detected. In this mode, the main functions are deactivated, the meter displays the row "FF XXXX", where XXXX is the HEX error code in the system and only the reading read command is available.



CSM 0203

Energy metering

The meter is designed to measure the import and export of active energy ($|W + |$, $|W - |$) into single-phase networks. The meter has different registers depending on the actual energy direction, which means that the meter will measure separately the import energy and the export energy. The unit can be ordered in single or double tariff mode. In double tariff mode, the meter measures the active import energy in two registers, one for each active tariff. In addition to the active import energy, the meter measures the exported active energy, regardless of the tariff configuration. The energy impulse LED can be used to test the accuracy class of the meter.

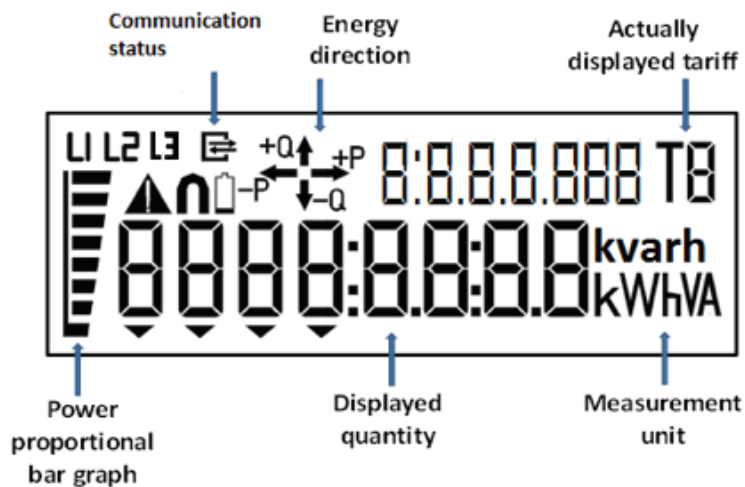
Display

- Liquid Crystal Display (LCD), TN positive reflective polarizer type
- Backlighting with low power
- Flashlight Detection Sensor

The meter display has the following characteristics:

- Visible surface: 60 x 22 mm;
- Number of digits / height: 8 digits of $h = 8\text{mm}$;
- Symbols for units of measurement, $h = 4\text{mm}$

The surface of the LCD screen is reflective, requiring ambient light reading. The display can be read from the direction "6 o'clock". The meter display with all segments turned on is shown in Figure 1, with description of the symbols. This display mode is part of the special test sequence that can be used to determine physical LCD defects (for example: segments that are always on or always off).



Battery

- Lithium thionyl technology, rated voltage 3.6V, capacity 1.2 Ah..

Indicators

- LED with energy impulse, visible spectrum (red color)
- Special indicators on the LCD screen



Communication

- Optical port according to EN 62056-21
- Communication protocol according to EN 62056-21, reading modes and support C programming modes

Communication with the meter is done in accordance with EN 62056-21, using module C in the protocol. The device's optical port can be used to read measurement data and to switch to test mode. Protection against unauthorized parameterization is ensured by prohibiting access to parameterization functions. The communication commands that are active when the terminal block cover is closed are listed below: The available communication commands are:

- Enter the test mode (E2 0101 ()). The command to enter the test mode is password protected, the same user password as the one used to set the clock.
- Test output mode (E2 0102 ()) (the output of the test mode can also be achieved by interrupting the supply voltage) The meter type is transmitted in the signaling phase of the protocols EN 62056-21 and has the following format: AEM CSM0203nnnnnnnnn. The nnnnnnnnn field is factory-set and can represent different customer identification data.

Calendar clock

The CSM 0203 meter has a real-time clock with calendar and automatic observance of leap years. It supports the daylight saving time with automatic change of summer time/ winter time, on the last Sunday in March and the on the last Sunday in October.

Events

The CSM 0203 meter records several events that are shown in the example below. Currently recorded events can be viewed in the communication reading and can also be deleted using a communication command.

example:

- Event type: Data format
- Date and time of the last parameterisation: ynnnddhmm, where
yy = year
nn = month
dd = day of the month
hh = hour
mm = minute

The date and time of the last RTC synchronization: ynnnddhmm, the same code as above

The date and time of the last reading : ynnnddhmm, the same code as above

Date and time of the last removal of the terminal cover: ynnnddhmm, the same code as above

Number of voltage drops nnnnnnnn, n = decimal



Display data during battery power

The measuring device implements a mechanism by which it can display the indices recorded by the energy registers. The display time is at least 1 minute after activation, and the data will be run for the duration defined as in normal functional mode. During battery operation without a network voltage, the meter display will stop. To activate the LCD display, to display the information, the user must have a flashlight to illuminate the battery detection point. This mechanism is implemented to save the battery from the backup battery. An activation sequence has been implemented to avoid unwanted LCD activation due to different environmental conditions.

PIPING AND MOUNTING DIMENSIONS, SEALS

