

# KWh METERS

## Reference Documents:

IEC 60-1:1989,  
IEC 68-2-2:1974,  
IEC 68-2-30:1980,  
IEC 68-2-5: 1975,  
IEC 387: 1992,  
IEC 695-2-1:1980,  
IEC 1000-4-2:1995,  
IEC 1000-4-3:1995,  
IEC 1000-4-4: 1995,  
IEC 1036: 1996,  
IEC 1038:1991,  
IEC 1107:1996.

## RS 80368 [ ] [ ] [ ]

Static single-phase watt-hour meter for active energy with differentiated rating

### Advantages

- differentiated rating
  - increased reliability
  - greater time between failures
  - high accuracy class
  - fast data reading
  - information centralization monitoring
- The meters are used in single-phase mains for residential and industrial appliances.

### Differentiated Rating

There are four tariffs which are changed:

- **CSM AXX** - using the internal change-over clock
- **CSM BXX** - upon command received from CSM AXX meter or from external device.

### Active Energy Measuring

The meter multiplies and integrates the current and the voltage values provided by two analogue-digital converters with automatic offset cancellation.

### Active Tariff Determination by Time and Power Consumption

The active tariff is set by joining three parameters- season, day type and time of the day. The year is divided in six seasons whose limits and distribution are programmed. There are four-day types (normal day, weekend day, festivity day and special reserved type day). Maximum eight-hour intervals can be defined during the day for each season.

For differentiated rating by power consumption a limit power threshold may be defined. In this case there are two groups of tariffs [(T1, T2) & (T3, T4)] established using the same criteria as above. The active group is switched according to this power threshold.

### Data Storage

The meter stores the indexes, the time information and the tariff change schedule (for CSM AXX), during the entire life-time of the meter or for two years in non-supply state.

### 7 Digits LCD Display

The display allows the sequential displaying of:

- current tariff index (also the tariff identifier T1...T4);
- the totalizer index;
- current date (only for CSM AXX);
- current time (only for CSM AXX).

An element of the sequence is displayed for 20 seconds, then the display returns to the active tariff.



### Pulses Output

The pulses frequency on optical port are proportionally with measured energy:

- CSM AXX - red LED on the frontal panel or optionally on IR port
- CSM BXX - red LED on the frontal panel and IR LED from optical port.

### Communication

By optical port according to IEC 1107, to PC or to Hand Held Unit.

### Data Protection

The stored data is protected against unauthorized access as follows: level 3 protection - for reading / reprogramming of the operating parameters (password according to IEC 1107); level 4 protection - for changing the indexes and changing of the level 3 password (password and access inside the meter).

### Communication Program CSMCom.exe

The program allows the user to interact with AXX and BXX meters and with the HHU via computer. It allows reading / writing information from both meters and HHU and maintains a subscriber database.

Using CSMCom the user can read all the operating parameters (indexes, tariff changing schedule) from both AXX and BXX meter. It can also reprogram the AXX meter (current time, tariff changing schedule, etc.).

The program stores the subscriber specific data (indexes) and the tariff changing schedule in a database, in a format that allows its use by the HHU.

Also it allows the user to display / modify the subscriber and meter parameters.

Static watt-hour meter

DIFFERENTIATED RATING

ISO 9001

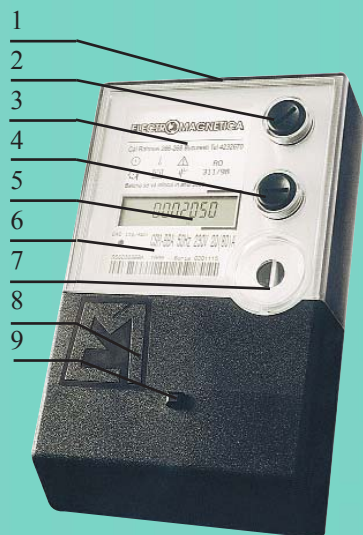
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ELECTROMAGNETICA

# KWh METERS

## Available variants:

- with internal tariff change-over clock:
  - RS 80368 AAA
  - RS 80368 AAB
  - RS 80368 ABA
  - RS 80368 ABB
- without internal tariff change-over clock:
  - RS 80368 BBA



1. Metrological seal
2. User accessible button
3. Transparent cover
4. Programming button (only for Axx type); sealed
5. Display
6. Red LED
7. Optical port
8. Terminal block cover
9. Terminal block cover seal

## Meter classification in accordance with IEC

■ Accuracy class	class 1
■ Working mode	continuously
■ Main type	single phase
■ Meter connection	directly connected
■ Number of main wires	two wires (phase and neutral)
■ Ratio between $I_{max}$ and $I_b$	4 (high measuring capacity)

## Constructive variants

■ First letter	Constructive variants	
■ Second letter	Basic current / Maximum current [ $I_b$ / $I_{max}$ ]	A - 10 A / 40 A B - 20 A / 80 A
■ Third letter	Reference voltage	A - 230 V B - 240 V

**Note:** A - meter with internal tariff change-over clock; B - meter without internal tariff change-over clock

## Electric characteristics in accordance with IEC

	CSM AXX	CSM BXX
■ Reference voltage $U_{ref}$	230 V or 240 V	
■ Reference current $I_b$	10 A or 20 A	
■ Maximum current $I_{max}$	40 A or 80 A	
■ Reference frequency $F_{ref}$	Hz (60 Hz option)	
■ Meter constant K	2560 imp/kWh	640 imp/kWh
■ Active power	max. 3 W (typically 0.6 W)	max. 2 W (typically 1 W)
■ Consumed apparent power	max. 25 VA (typically 4 VA)	max. 10 VA (typically 8 VA)
■ Sensitivity	0.004 $I_b$	
■ Short time over currents influence	30 $I_{max}$ for 10 ms 20 $I_{max}$ for 0.5 seconds	
■ Starting	max. 5 seconds	

## Constructive data

■ Meter case	fire-resisting UV polycarbonate
■ Meter cover	transparent UV polycarbonate
■ Terminal box	non-hygroscopic bakelite according to ISO 75 (for $t = 135^\circ\text{C}$ and $p = 1.8 \text{ Mpa}$ )
■ Terminals	connection of 6 mm maximal diameter conductor
■ Dimensions	207 x 124 x 61 mm
■ Net weight	max. 0.850 Kg
■ Rated life-time	20 years

## Environmental requirements

■ Macroclimatic zone	N
■ Working category	3
■ Atmosphere range	3
■ Temperature aggressiveness	$-25^\circ\text{C} \dots +55^\circ\text{C}$
■ Air relative humidity	80% at $20^\circ\text{C}$
■ Maximum air humidity	100% at $25^\circ\text{C}$
■ Altitude	2000 m
■ Normal protection degree	IP 54

## Transportation and warehousing

■ temperature	$-25^\circ\text{C} \dots +70^\circ\text{C}$
■ air relative humidity	80% at $20^\circ\text{C}$

## Resistance on environmental agents

■ Heating and fire resistance	IEC 695-2-1: 1980 (glow wire test)
■ Shock resistance	IEC 68-2-27: 1987
■ Vibrations strength	IEC 68-2-6: 1982
■ Spring hammer strength	IEC 817
■ Solar and UV ray resistance	IEC 68-2-5

## Electromagnetic compatibility

■ Electrostatic discharge	IEC 1000-4-2: 1995
■ Immunity to HF external electromagnetic field	IEC 1000-4-3: 1995
■ Repetitive impulses	IEC 1000-4-4: 1995
■ Radio perturbations	SR CISPR 22: 1996, B class

Static watt-hour meter

DIFFERENTIATED TRAINING