

Energy Meter

Consumer Electronics

User Manual



CE



DEM1499
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Thank you for your confidence!

We congratulate you on your purchase of your new gauge of the cost of electricity. We are sure that you will be satisfied with this modern appliance.

This device will help you ascertain the costs of energy consuming appliances. We hope that you can find all "electricity hogs" and, thus, minimize your electricity costs.

Before using the appliance

After unpacking and before each use verify that the article presents damage. If this is the case can not use the article please contact your seller.

The operating manual is in compliance with the rules and regulations in force in the European Union. Abroad also note the directives and specific legal provisions-country-!



Before using your appliance first carefully read the safety warnings and instructions.

So you can use all the functions in a safe and secure way. Keep very well the instruction manual as well as the receipt of proof of purchase and, if possible, on the packaging. If you lend, offer or sell the handset, also delivered the instruction manual.

Proper Use

The apparatus used to determine in consumption of energy consuming devices connected and the resulting costs.

The article is suitable only for private use and not designed for commercial use.

Use only in accordance with the instructions described in this manual d. Any other use is considered appropriate and may cause damage or even lead to injury.



The manufacturer does not assume any responsibility-made by damage or caused by using inappropriate.

Adverse competences security

Before putting your electricity cost meter in operation will take into consideration the following points:

An electrical installation or a botched network voltage too high can lead to electrical shock.

- **The device is suitable only for use with 230 V / 50/60 Hz AC.**
- **Only connect the appliance to an outlet with contacts 230 V protection that has been properly installed.**
- **Do not use the appliance if it is visibly damaged or if the mind for power cord or plug is defective.**
- **Do not open the structure of the equipment, ask for your seller to repair specialists.**

It should be taken to a specialist workshop. In the case of attempted repairs inde-pendent,a bad connection or a wrong operation cease all rights regarding liability and warranty.

- **Only use the unit indoors and dry. Never operate the unit in humid or abroad.**
- **The unit can not come into contact with sprayed water or other liquids.**
- **Keep a minimum distance of one meter from sources of moisture such as washbasins.**
- **Never hold the device if your hands are wet.**
- **Never grab an electrical appliance after it has fallen into the water. In a situation Semel-hante immediately**
- **Do not tamper with the device.**
- **Do not connect multiple metered electricity costs among themselves,**



- **Do not cover the appliance with other materials by exists the danger of overheating.**
- **When not using the device or if a malfunction occurs, disconnect the power source.**


Dangers for children!

Often children do not recognize or underestimate the dangers.

- **Keep bags and materials used to pack the machine away from babies and small children. Danger of suffocation!**
- **This appliance is not suitable for use by persons (including children) with a capacity of physical, sensory or intellectual abilities, or who does not experience and / or sufficient knowledge, unless they are under the supervision of a person that is responsible for their safety or that have had instructions on how to operate the device.**
- **Supervise children and keep the appliance out of their reach to ensure that they do not play with the appliance. The their misuse means danger of electric shock!**

Recommendations for the use of batteries

The meter cost of electricity in the functional with 2 batteries (button) of the type LR44 or AG13 (these batteries are included).

 *Only use the battery type here specified, in order to prevent fire. Never attempt to charge the batteries.*

- **Do not throw batteries into a fire, not short-circuit the batteries or try to take them apart!**
Danger of explosion!!
- **Keep batteries out of reach of children.**
- **Seek immediate medical attention if swallowing a battery.**
- **Immediately remove the batteries inside the device! Heightened risk of leakage!**
- **Those cells not exposed to extreme conditions, such as heaters over! As in radiators or in direct sunlight! Heightened risk of leakage!**







- **Avoid contact with skin, eyes and mucous membranes. In case of contact with battery acid, immediately wash the affected area with plenty of clean water and seek medical attention immediately.**
- **Only use batteries of the same type, not simultaneously use batteries of different types not mix old batteries with new batteries.**
- **Always replace both batteries at the same time.**
- **If necessary, clean the battery contacts and device before placing the stack.**

Symbols: Explanations

You can the following symbols on the device:

	Only be used in enclosed spaces
CAT II 300 V	The instrument is approved for electrical circuits that if you find the train connected directly to the network of low voltage
	Note concerning the disposal of used appliances (see page 35)

Commissioning

The batteries come included with the appliance. Colo-batteries to work removing the insulation strips compartment. To open the battery compartment act according to what is shown below.



Replacement of batteries

1. Unplug the appliance.



2. To replace batteries, remove the two screws with a screwdriver and loosen the lid of the battery compartment.
3. Remove dead batteries and proceed to disposal / recycling collection point for used batteries.
4. Insert two new batteries (button cells 1.5 V, type LR44/AG13) in the battery compartment.

By introducing them note-to correct the polarity (+ / -), as shown in the lower compartment.



5. Replace the battery compartment cover and tighten the screws with a screwdriver.

Information :

The battery compartment just leave to introduce a direction, pay attention to the contours of the structure.

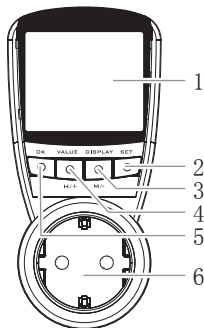
Before placing the appliance in operation of the battery compartment must be completely inserted.

If not use the device for some time remove the batteries from the inside in order to avoid that spend complete

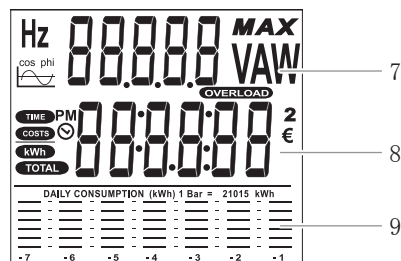


Description of Article

- 1 **LCD**: Display for the values of the readings, time and costs
- 2 **SET**: Input mode of the time and cost of electricidade
- 3 **DISPLAY M/-**: Show the time, costs or consumption
- 4 **VALUE H/+**: Presentation of various values of readings
- 5 **OK**: Save the intro / enter the price of electricity and heat overload
- 6 Taken with integrated protection for children. When inserting the plug should fit into both pins simultaneously.



LCD



- 7 Area for indicating the voltage, current, power, frequency, power factor and overload.
- 8 Area for indicating the hour operating time, cost, power consumption, and money.
- 9 Graphical indication of the energy consumption in the last 7 days.



Overview of functions

Buttons			
OK	VALUE	DISPLAY	SET
Save introductions; Choose 12 hours or 24 hours	V		Regular time
–	A	 	–
Save introductions; Show values	A _{MAX}	 	Introduce costs of electric/kWh
–	W	 	–
–	W _{MAX}	 	–
Save introductions	A _{OVERLOAD}		Introduce limits of overload
–	Hz		–
–			–

Press the button **VALUE H/+** or **DISPLAY M/-** to call the measurement values and particulars.

The settings can only be changed when the corresponding values appear on the display (here shown in grey). For this, Press the **SET** button for 3 seconds.



Preparation

i (no cost estimate) may skip this chapter and proceed immediately to page 60.

Regular time


1. Press the **DISPLAY M/-** until appears



2. Press the **SET** button for 3 seconds. The hour indication flashes.
3. Set minutes with the **VALUE H / +**.
4. Adjust the minutes with **DISPLAY M / -**.
5. Place the second zero-click

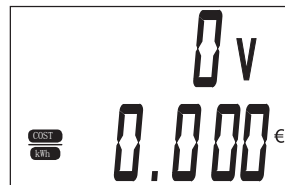
6. Complete and confirm the introduction with the **OK** button.

Indication of 12/24 hours

1. Press the **DISPLAY M / -** until the display appears .
2. Press the OK button to adjust 12 hours or 24 hours. (In case you choose the indication of 24 hours, PM = after the 12:00).

Setting the price per kWh

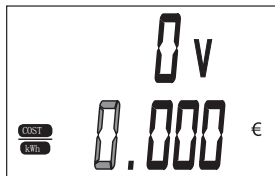
1. Press the **DISPLAY M / -** until the display shows 



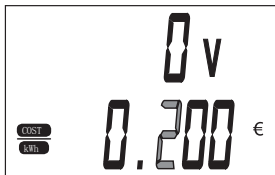
2. Keep the **SET** button pressed during 3 seconds. The Euro zone indication flashes



Now enter the price of electricity per kilowatt-hour. If you have another price for electricity at night first enter price for the daily rate.



3. Adjust the value with the *VALUE H/+* or *DISPLAY M/-*.
4. Press the *SET* button. The first indication of the number of cents



5. Adjust the value in cents with the buttons *VALUE H/+* or *DISPLAY M/-*.
6. The following number of cents should regulate itself in the same way (example: 0285 = 28.5 cents).



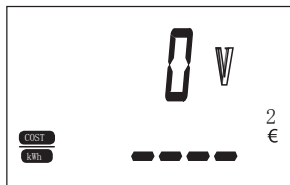
7. Complete and confirm the input with the *OK* button.
8. If you have a tariff of electricity Normal (not bi-clockwise) then finished the introduction of prices here and can move to other menus with the *DISPLAY M/-*.





Introduction of the price for energy at night

9. Press the *OK* button.

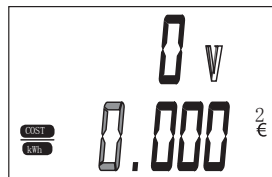


On the display appear 4 strokes. This means that there is a second pricing for electricity at night

10. Press the *VALUE H/+* to enter a price for electricity at night. The display now as follows:



11. Press the *SET* button for 3 seconds.
The area of the indication of reduced blink rate



12. Set the price for electricity at night conform the previously described (3-7 points).



13. After the introduction of prices press the *OK* button. The display shows now the time display. Now enter the time from which the electricity is accounted for by more expensive price.



14. Press the **SET** button for approximately 3 seconds. The time display is intermittent try.
15. Set times with **VALUE H/+**, and the minutes with the **DISPLAY M/-**.
16. To save press the **OK** button.
17. Return to press the **OK** button to set the time from which boasts the price of electricity low (at night).



18. **SET** button pressed for about 3 seconds. The hour indication flashes.

19. Enter the time from which the side will be calculated in accordance with the price of electricity in the evening (adjust the hours with the **VALUE H/+** and the minutes with the **DISPLAY M/-**).



20. Save the entries by pressing the **OK**
21. With the **OK** button you can control the set values. These are presented in sequence to: price day - price night - hours of daily rate time of night tariff.
22. With the **DISPLAY M/-** then set another value (eg hours)



Implementation of measurement


After entering the time and price of electricity could initiate measurements.




1. Only connect the appliance to an earthed socket 230 V, which has been properly installed.
2. Now connect (s) the consumer (s) or the consumer (via a plug casing) to meter the costs of electricity.

Note that the total power of consumers connected must not exceed 3680 watts.

See the readings










The following values are displayed:

- **V** (voltage)
- **A** (current actual)
- **A^{MAX}**(maximum current)
- **W** (absorbed power)
- **W^{MAX}**(maximum power absorbed)
- **A_{OVERLOAD} / W_{OVERLOAD}** (current value of overload power value of the overload)
- **Hz** (Frequency)
-  (power factor cos)



To see long-term readings repeatedly press **DISPLAY** / - .

We present the following values:

-  (current time)
-   (total consumption in kWh)
-   (price / kWh)
-   (price / kWh €)
-   (total time of measurement)

Delete the values measured

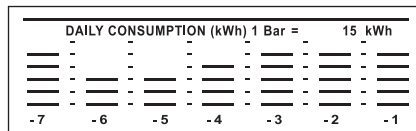
In case of need can also clear the values of total consumption (kWh), the time measuring total and total costs, by pressing and holding the **OK** button:

1. Press and hold **VALUE H** / + until Strom (A) on the display.
2. Hold down the **OK** button until the device beeps. All values are deleted.

History of consumption

Its cost of the electricity meter stores the energy consumption of the equipment connected over a period of past 7 days.

The LCD display shows a graphical presentation below, each column represents a day (-1 = Yesterday, -7 a week ago).



The individual bars in the columns represent the kWh consumed.

According to consumption changes the scale, so that each bar corresponds to 1, 2, 5, 10 or 15 kWh.



Other functions (for professional)

Overload

Adjust the values of the overload

With this function you can determine in which current value (16 in max) or power: 5 WAT-cia (3680 W Max.) the appliance shall issue a overload warning.

When one of the values of overload is ultra-past appears on the display **OVERLOAD** blinking and the device sends a beep.

1. Hold the button **VALUE H/+** to appear **OVERLOAD** on the display.
2. Hold down the SET button for about 3 seconds. The display flashes to indicate to the amps, or W for watts.
3. With the buttons **VALUE H/+** or **DISPLAY M/-**

4. Press again the **SET** button. The first digit in the display flashes.
5. Set the desired values with the buttons **VALUE H/+** or **DISPLAY M/-**.
6. With the **SET** button can go to the next digit and regulate it the same way.
7. At the end confirm the introduction of values with the **OK** button.

Delete the values of overhead

1. Press the **VALUE H/+** until Amax (maximum current) and Wmax (maximum power) on the display.
2. Hold down the **OK** button to the provi-tive beeps. The value of the corresponding on-load is then removed.




Power Factor

The power absorbed by a consumer in W is calculated from the current in A multiplied by the voltage V with the following formula:

$$P [W] = U [V] * I [A]$$

In the case of appearance of capacitive or inductive consumer occurs, however,





gap between the course of current and voltage, i.e. the current follows the course of the voltage or vice versa. With the phase angle φ gets then the relationship between the effective power, reactive power and apparent power. The reactive power ensures that a coil or an electric motor generates a field magnéti-co. The energy of the reactive power is initially stored in the magnetic field, but with each periodic magnetic field reduction back to be sent to the network. So, for the power we have then the following formula, taking into account the actual values



U

e I:

$$p = U * I * \cos\varphi - U * I * \cos(2\omega t + \varphi)$$

- The expression contains a sum independent of time, the active power $P = U * I * \cos\varphi$,
- A summation with temporal dual frequency and amplitude $S = U * I$, a variant whose average sum is zero. The size S is called apparent power.


Troubleshooting

Indications not common in the visu-screen Demoralization

If the display screen presents information not common or if it does not react to touch the buttons there should be an initiation device.

1. Remove the appliance.
2. Remove batteries briefly and then return to place them as shown on page 33.

Caution: When removing the batteries, all introduced values are reset to factory settings and have to be re-introduced later.



Cleaning

Danger of electric shock!

- Always turn off the meter of the current cost of electricity when cleaning it.
- The system can not be washed or submerged in liquid-Gido.

For cleaning use only a soft cloth



Environmental Protection

Disposal of batteries



Cells and batteries can not be placed in household waste!

Each consumer has a legal obligation to deliver cells and batteries at a point of collection of your community, your neighborhood or in the store.

All batteries can be taken to a disposal point environmentally friendly.

Cells and batteries containing harmful substances are marked by signs and by their chemical symbols

(Cd as cadmium, Hg mercury, Pb for lead).

Disposal of used appliances

(Applicable in the European Union and other European countries with separate collection of recyclable materials)



The apparatus used should not be placed in household waste! When starting from a certain point no

longer able to use the device, each consumer has a legal obligation to deliver separately used appliances, for example, at a collection point of community / your neighborhood. Thus it is possible to ensure that old appliances are properly utilized, reducing in this way the negative impacts on the environment.

This is why electrical appliances is established marked with the symbol above.

Packing

Dispose of packaging materials that no longer requires an appropriate and separate them properly, giving them an appropriate collection point.34 /35



Technical Data

Input voltage / output voltage: 230 V ~ / 50 Hz

Power consumption: Max. 16

Range voltage: 190 V - 270 V

Current range: 0.01 A - A 19.999

Power range: 1 W - 3680 W

Indication of frequency: 46-65 Hz

Resolution: 0.5 W

Measurement of consumption: 0.00 to 9999.99 kWh

Duration of indication: up to 9,999 hours 59 minutes

Since our products are constantly updated and improved technical changes are possible and design.

Accuracy of measurement

Volt : $\pm 3\%$ of measurement ^{1) 2) 3)}

Amperes : $\pm 3\%$ of measurement $\pm 0,002\text{ A}$ ^{1) 2) 3)}

Watt : $\pm 3\%$ of measurement $\pm 1\text{ W}$ ^{1) 2) 3)}

KWh : $\pm 3\%$ of measurement $\pm 0,1\text{ kWh}$ ^{1) 2) 3)}

Factor : $\pm 0,1\%$ power factor measured
 $0,7 \leq \cos \leq 1,0$ ^{2) 4)}

- 1) Frequency: 46-65 Hz
- 2) Measurement in a normal room temperature
- 3) Distortion of voltage/current $< 15\%$
- 4) Current $\geq 1,00\text{A/sinusoidal}$.

Frequency = 50 or 60 Hz.
Without electronic circuits



Warranty conditions

The product purchased by you was made with the utmost care and subjected to continuous monitoring during production.

The warranty period is 1 years and begins on the date of acquisition.

If, despite the care processes of production and verification, there is an abnormality in the unit, the repair must be carried out by specialists.

In the case of any request for information or replacement parts, always quote the model as the signpost on the instrument.

Warranty service is provided in accordance with statutory / country-specific (proof by invoice).

Excluded from the warranty service, the damage that is caused by wear and tear, overloading inappropriate or handling. In the event of a complaint, first contact the customer support service.

This service will be glad to inform you with regard to the following procedures. Please DO NOT send your article unless it is required!

You should keep the receipt as proof of same. This warranty does not apply in case of damage caused by accident, improper handling and / or force majeure.

The warranty will be voided if unauthorized persons have made any kind of manipulation on the device.

In the case of sending the unit to our service, make sure that the same be done in appropriate packaging. We do not hold us accountable for any damage caused by transportation. In case you need our service guarantee, please go to our customer support service: