

OPERATING MANUAL CAT. NO. 37.3001
ENERGY CONTROL - POWER CONSUMPTION MONITOR

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1.0 INTRODUCTION:

Thank you for choosing this instrument from TFA.

Before you use it

Please be sure to read the instruction manual carefully.

This information will help you to familiarise yourself with your new device, learn all of its functions and parts, find out important details about its first use and how to operate it, and get advice in the event of faults.

Following the instruction manual for use will prevent damage to the device and loss of your statutory rights arising from defects due to incorrect use.

We shall not be liable for any damage occurring as a result of not following these instructions. Likewise, we take no responsibility for any incorrect readings and for any consequences which may result from them.

Please take particular note of the safety advice!

Please look after this manual for future reference.

2.0 INTENDED USE:

This is a state-of-the-art power monitoring socket that is highly accurate and easy to use. The measuring range of the Energy Control is from approximately 4W to 3600W (automatically varies from one appliance to another) and is therefore ideal for use with a large variety of electrical appliances.

Energy Control is designed for use only as an indicator for the average cost and average amount of electricity used for electrical appliances. Despite its accuracy it is not officially certified and therefore readings cannot be used as evidence in any dispute between the Electricity Company and the user.

3.0 SAFETY PRECAUTIONS:

- The product is exclusively intended for the field of application described above. The product should only be used as described within this instruction.
- Any other use, other than described, may risk dangers in short circuiting, fire, electrical shock, etc and damage of this product.
- Unauthorised repairs, modifications or changes to the product are prohibited.
- Observe the specifications on the type plate of the appliance to be connected!
- The product is not be used for medical purpose or for public information.
- Do not place the unit near extreme temperatures, vibration or shock.



Caution! Risk of electrocution!

- This appliance is not intended for use by persons (including children) with reduce physical, sensory, or mental capacities, or lack of experience or knowledge, unless they have been given supervision or instructions concerning use of the appliance by a person responsible for their safety. Children should be supervised to ensure that they do not play with this appliance.
- Connect Energy Control only to an approved 230VAC / 50Hz \pm 10% (10/16A) earth-contact type mains outlet (VDE).
- Only loads with the same voltages (230V / 50Hz) can be connected.
- The max. load of 3600 Watts (16A) must not be exceeded

- The recommended operating temperature is 0°C to +50°C. Higher temperatures may especially during measurements of large loads lead to dangers of overheating and permanent damage of the product.
- Energy Control is only designed for indoor use within dry environments. Outdoor use is strictly prohibited!
- Do not operate the product within confined rooms or other adverse conditions where inflammable gases, vapors or dusts may be present!
- For safety, never allow the product to operate in moist conditions or to get wet.
- The product must under all circumstances be separated from mains supply prior any to maintenance, repair, change of parts or disassembly otherwise components and connectors carrying high and dangerous voltages may be exposed.
- Capacitors in the circuitry of the product may still carry high voltage charges even though it has been separated from the mains supply.
- In commercial institutions the safety regulations of the alliance of commercial professionals associations for electrical installations and production facilities must be observed!
- In schools, educational institutions, hobby shops or co-operative workshops the use of the product must be responsibly supervised by trained personnel!
- Never insert needles, metal or any other objects into the mains outlet!
- Do not plug one Energy Control into another!
- If the product is no longer able to operate safely, it must to be put out of operation and disposed of for reason of any accidental use when the following is evident:-
 - a) product shows obvious signs of damage.

- b) product does not function
- c) product has been stored in unfavorable conditions for a long period of time.
- d) heavy strain during product's transport may have occurred.

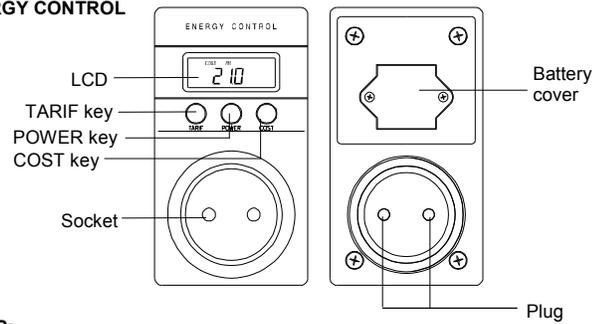


Caution!

Risk of injury:

- Keep the battery out of reach of children.
- Batteries must not be thrown into the fire, short-circuited, taken apart or recharged. Risk of explosion!
- Batteries can be fatal if swallowed. If a battery has been swallowed, get medical assistance immediately.
- Batteries contain harmful acids. Low batteries should be changed as soon as possible to prevent damage caused by a leaking battery.
- Wear chemical-resistant protective gloves and glasses when handling leaked batteries.

4.0 THE ENERGY CONTROL



5.0 FEATURES:

- Cost monitoring
- Cost forecasting
- Instantaneous power consumption (Watt).
- Maximum load power display (Max Watt).
- Total energy consumption display (Total kilo Watt hour)

6.0 COST MONITORING:

Using this feature, users will see the cost of electricity in running an their electrical appliances. For cost monitoring, the value is shown on the LCD as "TOTAL COST" and the information obtained will enable users to be more power consumption aware and efficient.

7.0 COST FORECASTING:

Cost forecasting is useful for budgeting future electricity bills as the approximate cost to run an electrical appliance over a period of time can be estimated in this way. There are three cost forecasting displays screens as follows:

- 1) COST/D = cost per day forecast (assuming normal usage)
- 2) COST/M = cost per month forecast (assuming normal usage)
- 3) COST/Y = cost per year forecast (assuming normal usage)

8.0 INSTANTANEOUS POWER CONSUMPTION:

When an electrical appliance is plugged into the Energy Control, by pressing the "POWER" key, the instantaneous power (Watts) being used at that precise moment in time can be ascertained.

9.0 THE MAXIMUM LOAD POWER DISPLAY:

Again, by pressing the "POWER" key, the maximum load power (Maximum Watts) will be displayed. This reading applies to maximum power that an electrical appliance has used during its monitoring period.

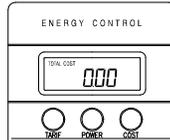
10.0 TOTAL ENERGY CONSUMPTION DISPLAY:

Again, by pressing the "POWER" key for a third time, the LCD will alternate to show the total kWh consumed by an electrical appliance for the monitoring period.

11.0 SETTING UP:

Before plugging the Energy Control into the mains socket and any appliances into it, the values must be set.

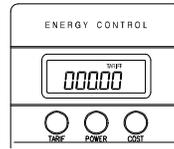
Firstly, enter the "TOTAL COST" display by pressing the "COST" key to alternate between "COST/D", "COST/M" and "COST/Y" displays. Now check that all the values displayed are set to zero as follows: (as illustrated below).



1. Any preset values in the "TOTAL COST" display that the user has not set in must be reset to zero to ensure accurate readings. To do this, simply press and hold down the "COST" key (for approximately 4 seconds) and all values with the exception of Tariff (cost per kilowatt hour) will be reset to zero.

2. Once all the values displayed are set zero in the "TOTAL COST" display, then press the "TARIF" key to enter the Tariff setting mode.

12.0 TARIFF SETTING MODE:



The value of a single unit of kWh (kilo Watt hour) can usually be found on a previous electricity bill. Please take this figure from a recent bill as costs may have since been updated by the Electricity Company. If the cost of a kWh cannot be found on the bill, then contact your local Electricity Company for the price of this unit. The Tariff display may not necessarily be set to zero (as illustrated above). If there are any preset values that the user has not set themselves, then simply overwrite them when setting the unit cost of a kWh as follows:

1. Press and hold the "TARIF" key (approximately 3 seconds) until the first digit on the right hand side starts flashing.

2. Now press either the "**POWER**" or "**COST**" keys to set the desired digit. Each press of either key changes the digits by one. The "**POWER**" key increases the digits from 0 to 9 and the "**COST**" key decreases from 9 to 0.
3. Once a digit is set, press the "**TARIF**" key once to move to the next digit.
4. Repeat steps 2. and 3. until the desired values for the kWh are set. If any of the digits do not require changing then simply press the "**TARIF**" key to move to the next. Once all the desired value has been selected, the "**TARIF**" key should be pressed once more to confirm the setting of all digits (the last digit on the left had side will stop flashing).

Note: if no keys are pressed for about 8 seconds during tariff setting mode and the digit is flashing, the unit will automatically confirmed and display the last entered tariff; the digit will stop flashing.

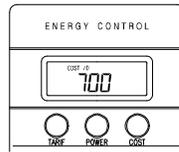
5. Once the Tariff is set, plug the Energy Control into the mains supply and then plug the electrical appliance into the Energy Control.

Note: The appliance should be operated as normal - for hints on this see the "**Extra Notes**" section.

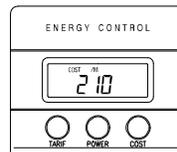
13.0 USING THE ENERGY CONTROL

Using the Energy Control is very easy. For example: the cost to operate appliance "X" is 7.00 (€, £ and etc.) per day and after 20 days of operating the appliance, the TOTAL COST is 140.00 (€, £ and etc.), therefore, we can assume the following readings:

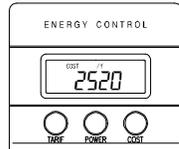
a) Cost per day is:



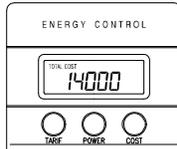
b) Cost per month is:



c) Cost per year is:



d) Total Cost is:



When the monitoring of an electrical appliance is complete; simply turn the appliance off; remove the Energy Control from the mains and then remove the appliance from the Energy Control. However,

should further monitoring be required, then do not remove the electrical appliance from the Energy Control and mains supply but simply take the reading with the electrical appliance still plugged in.

Notes: The above illustrations shown assume a daily value of 7.00 (€, £ and etc.) and 7 days per week, 30 days a month and 12 months a year (to alternate between these displays simply press the "COST" key.

"OFL" will be displayed on the LCD should any cost forecasting reading be over the 6-digit display range.

As the price of a kWh unit does not change (unless by the Electricity Company), only the Total Cost display (actual electricity used per day, month and year) requires resetting once the Energy Control has completed a reading. To reset, press and hold down the "COST" key (for approximately 4 seconds) where all values (with the exception of Tariff - cost per kilowatt hour) will be reset to zero (as was done in **Setting up** - step 2, above).

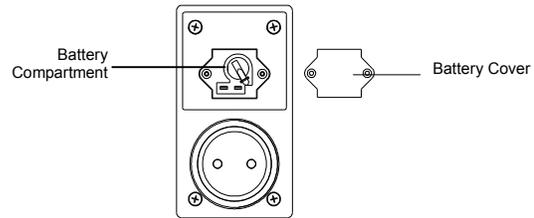
14.0 REPLACING BATTERIES

Low power batteries usually reduces the contrast of the LCD. If the LCD becomes difficult to read then the battery must be replaced immediately. The Energy Control uses a single LR44 Key Cell Battery, 1.5V which has an estimated average lifetime of 2 years.

To replace the battery, simply follow these steps:

1. Unscrew the screws on the battery cover and remove (as illustrated below).
2. Remove old battery and replace with a new one of the same size and voltage whilst observing correct polarity.

3. Replace battery cover and secure back into place.



15.0 EXTRA NOTES:

The electrical appliance connected to the Energy Control should always be operated as normal if forecasting of the cost is required. If an accurate reading per day, month or year is required then it is highly recommended to keep the appliance plugged into the Energy Control and to operate it normally for at least a few days. This is so that it can take an average of the power used and its cost over the time period.

The longer the Total Cost of an appliance is monitored by the Energy Control, the more accurate any forecast (day, month, year) or Total Cost reading will be. There are a variety of reasons for this, some of them are:

- The power supply to the mains from the Electricity Company is never constant and at some stage will vary slightly. For example, if electricity varies by 1% for every 1 second of usage and the Energy Control is used for only 5 minutes then the cost forecast will not be as accurate compared to use for 3 hours with the same variation of 1% for every 1 second in the power supply.
- Some electrical appliances use more electricity when first turned on than others and the amount of electricity it uses will decrease the longer it left operating (commonly referred to as "Warming up").

Example 1:

A lamp is plugged into the Energy Control and operated every evening:

Day 1, from 18.00hrs to 2000hrs

Day 2, from 19.00hrs to 2100hrs

Day 3, from 18.30hrs to 2030hrs

Assume it costs 1.00 (€, £ and etc.), per hour to run this lamp, the Total Cost at 2000hrs on day 1 would be 2.00(€, £ and etc.). If Total Cost per day is required then it will show 24.00 (€, £ and etc.) - at this point the Energy Control is assuming the lamp will be left on all day for 24 hours, but this is not the case. At 1859hrs on day 2, the Energy Control will show the Total Cost as the same at 24.00 (€, £ and etc.) but now the cost per day would have dropped to about 2.00 (€, £ and etc.) as it has not been used for the last 23 hours. Before the lamp is turned "ON" on day 3, the Energy Control will have taken the total power consumption and the length of time that it has been turned off and averaged them out

for an accurate cost per day reading. This should show 2.00 (€, £ and etc.) and so you know how much, on average, the lamp is costing to operate everyday.

Example 2:

Some appliances are constantly turned on and off for varying amounts of time, such as refrigerators (motors), freezers, TV sets and etc. The power used by each of these electrical appliances varies greatly due to the time the motor is switched on and off, in such cases, it is recommended to keep the appliance plugged into the Energy Control for several days before taking the reading. If a reading is taken after the appliance has turned on and off only once, then this will not be an accurate account of its cost over time. It will only be an accurate reading of the cost of power that it has used in total.

Example 3:

Some appliances are used infrequently, such as power tools, food processors/mixers and so on. In cases like these, it is not recommended to try to work out the average cost per day, month or year. It is much easier to simply see make a note on how much it has cost (Total Cost) each time the appliance has been operated.

16.0 MAINTENANCE:

- Check the product for any damages at regular intervals!
- When cleaning the LCD and casing, use a soft damp cloth only. Do not use solvents or scouring agents.
- Do not submerge this unit into water.
- Any maintenance or repairs must only be performed by authorized service personnel being familiar with all relevant regulations.

17.0 SPECIFICATIONS:

- Absolute max. rating (short-time)
 - Load : 3600W
 - Current : 16A
- Operating voltage : 230VAC/50Hz
- Operating temperature : 0°C to +50°C
- Battery : LR44 1.5V

18.0 WASTE DISPOSAL

This product has been manufactured using high-grade materials and components which can be recycled and reused.



Never throw flat batteries and rechargeable batteries in household waste. As a consumer, you are legally required to take them to your retail store or to appropriate collection sites according to national or local regulations in order to protect the environment.

The symbols for the heavy metals contained are: Cd=cadmium, Hg=mercury, Pb=lead



This instrument is labelled in accordance with the EU Waste Electrical and Electronic Equipment Directive (WEEE).

Please do not dispose of this product with other household waste. The user is obligated to take end-of-life devices to a designated collection point for the disposal of electrical and electronic equipment, in order to ensure environmentally-compatible disposal.

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