CLIPSAL®

by Schneider Electric

Ecomind Electricity Monitor Kit

EM422EM-E-KBTS
EM422EM-E-KMTS

CE RoHS N700

Installation Instructions

Contents

1.0 Introduction

Energy metering and monitoring are at the heart of energy management: you need the information to tell where and when you're saving money.

The electricity monitor shows the amount of energy that a household is consuming at the time the display is read. The display can also give the user a reading showing usage in financial terms. You can walk around the home with your display device, switching appliances on and off to see the difference that each one makes.

If you have any questions about using your monitor or if you'd like further advice on monitoring electricity at home, please feel free to contact us, or visit the website for up to date information, downloads and frequently asked questions.

Email your questions to: **clipsal.com/feedback**

National Customer Care Enquiries: **Tel: 1300 2025 25. Fax: 1300 2025 56**

2.0 Safety

IT IS IMPORTANT THAT YOU OBSERVE SOME SIMPLE PRECAUTIONS BEFORE USING THIS PRODUCT.

When installing the monitor you should find that everything is relatively straightforward. However, there are a number of important health and safety issues, which you need to be aware of.

Please read and act upon the important information on the following pages. Remember, the device is not intrusive and does not require rewiring.

In some countries (i.e. Australia) the Live cable can only be accessed by a qualified electrician. If you notice anything unusual about the electricity supply such as loose wires, exposed cabling, burn marks, holes in the insulating materials or damage to the meter, stop immediately and report the findings to your supply company.

Do not force or bend the cables at any point during installation. If you are worried or have any concerns about the installation, please contact a qualified electrician immediately. The user does not need to remove the sensor through the working life of the unit. Battery changes are performed on the transmitter and on the display. There are no batteries to change in the sensor.

Do not apply the current sensor to uninsulated wire.

3.0 In the box

Your Ecomind Electricity Monitor Kit contains:
1 x Sensor (EM422S-12C90A)
1 x Wireless Display (EM422EM-E)
1 x Transmitter (EM422T-B or EM422T-M)
1 x USB Cable.

It also includes:

- Required batteries
- Quick start guide
- Installation instructions.

CT Sensor

You will need to attach the sensor to the Live feed cable, which connects the meter to the consumer unit. Any power you use in your home will pass through this cable. The clip-on sensor acts as a current sensor, and relays the amount of current being drawn in the home to the transmitter. From there it is sent wirelessly to the monitor display unit, which shows how much power is being consumed.

Portable Display Unit

The Electricity Monitor Kit EM422EM-E-KMTS is supplied with a mains powered transmitter that does not require any batteries and can be DIN-rail mounted.

Note: At the end of its serviceable life, the components should not be treated as general waste. They should be handed over to the applicable collection point for electronic equipment.

Overview about Ecomind sensors that can be purchased separately:
EM422S-12C190A: Clamp-type sensor, suitable for 90A cables up to 12mm diameter.
EM422S-16C120A: Clamp-type sensor, suitable for 120A cables up to 16mm diameter.

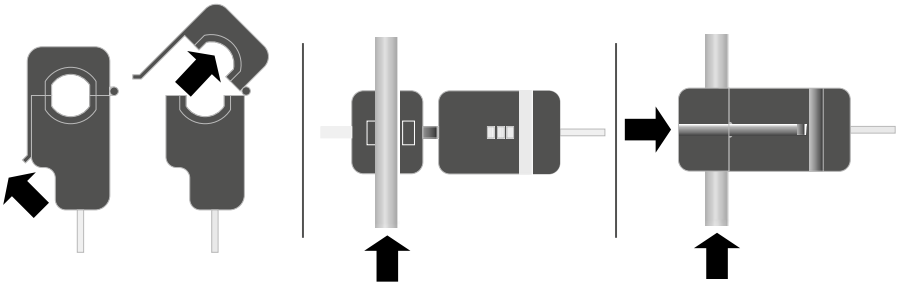
Please contact your Clipsal Sales Representative for any further details.

4.0 Installation of sensors

Important: The installation must be carried out by a licensed electrical tradesperson.

Fit the sensor

Attach the sensor to the Active/Live outgoing supply cable in the meter box. The sensor clip should be fitted over the insulated red phase wire running into or out of the electricity meter box. At no time should force or undue pressure be applied to any wiring or connections.



The sensors should fit loosely around the cable. For thicker cables a larger sensor may be required.

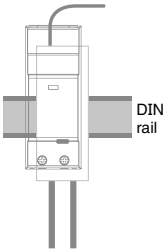
The clip-on sensor acts as a current sensor and relates the current being drawn into the home via the transmitter.

Note: In 3-phase installations, two additional sensors may be required.

Plug the sensor into the transmitter

Example EM422T-B (battery powered transmitter)

Insert the plug on the end of the white wire connected to the sensor, into any of the three input sockets on the transmitter.



Example EM422T-M (mains powered transmitter)

Connect terminal L1 and N of the transmitter, and insert the plug of the sensor cable into any of the three input sockets on the top of the transmitter.

A redily accessable disconnect device shall be incorporated.

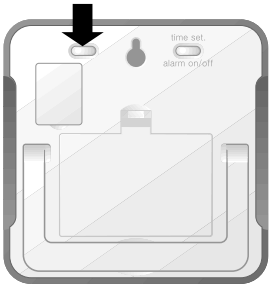
5.0 Linking transmitter and display

Step 1
Ensure three AA batteries are inserted in the transmitter and three AAA batteries are inserted in the display unit.

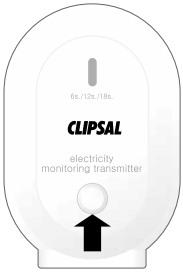
Step 2
Push the **Link** button on the reverse of the display unit for 2 or 3 seconds. The transmission signal symbol will flash for one minute.

Step 3
While the transmission signal in the display flashes, push the **Link** button on the transmitter and wait until the transmission signal symbol becomes solid.

Note: The default value for the transmission frequency is six seconds. This means the transmitter is sending information every six seconds. You can change the frequency from 6s (red flashing light) to 12s (orange flashing light) and to 18s (green light) pushing and holding the transmitter button.

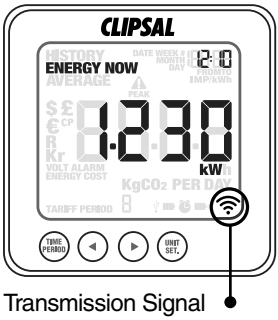


Link Button on the Portable Display Unit



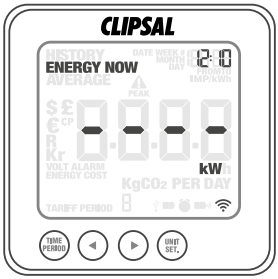
Link Button on the Transmitter

If the LINK is COMPLETED you will see the transmission signal



Transmission Signal

If the LINK is NOT COMPLETED you will see dashes on the display

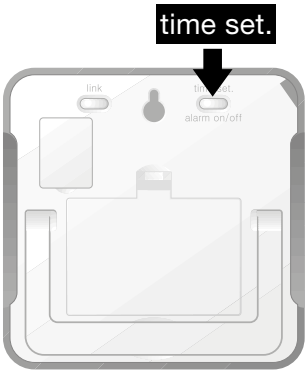


6.0 Setting time and date

The energy monitor needs to know the time and date in order to provide you with the correct information.

Set the time and date as follows:

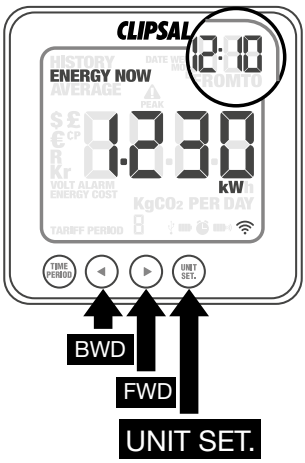
Step 1
On the reverse of the display you will find the **Time** button. Press and hold for two seconds. “Time set-up” will flash in the display.



Hold for two seconds

Step 2
Set the hour to the correct time by using **Backwards** and **Forwards** buttons. Press **Unit Set** button once to save the hours. Repeat for minutes, using the **Unit Set** button to confirm.

Step 3
Set the date by using the **Backwards** and **Forwards** buttons. Press **Unit Set** to confirm and move to month set-up. Repeat the process to set the year. Once the correct time and date have been set, push **Time Period** button to save and exit.

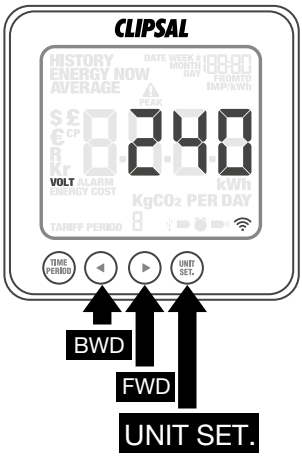


7.0 Set-up instructions

The energy monitor needs to know unit cost per kWh charged by your electricity supplier, along with voltage and alarm settings. The following four steps will move through each of these settings. If you have a dual or multiple rates meter, please see section 9.

Press and hold down **Unit Set** button for two seconds. This will enable you to enter the setting mode.

Throughout the set-up process, push **Time Period** button any time. Your settings will be saved and you will exit the function setting mode.



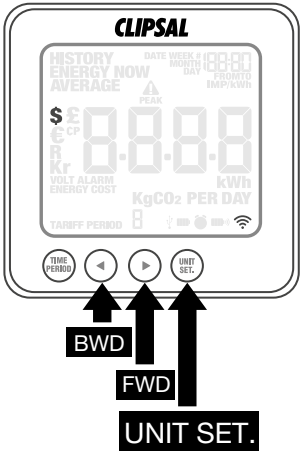
Step 1. Voltage

Press and hold **Unit Set** button for two seconds. Default voltage is set at 240V. Use **Backwards** and **Forwards** buttons to change the voltage. Press **Unit Set** button to save your setting and move into currency selection setting.

Step 2. Currency

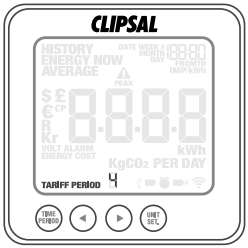
Select the currency using **Backwards** and **Forwards** buttons. Default currency will be "$". Push **Unit Set** button to confirm and to move onto tariff selection set-up.

Note: 20 seconds of inactivity in setting mode will return the unit to normal display mode without saving changes.



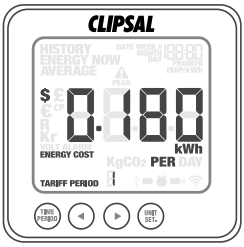
Step 3. Single Tariff Set-Up

On release you will see the symbol **Tariff Period 1** will be highlighted. If you are charged one single tariff, push **Unit Set** button to confirm. If you have dual tariff rate, please see the following page.



Step 4. Electricity Cost

Default cost is set at 0.18 $/kWh. This is the average price per kWh electricity that suppliers charge. Use the **Backwards** and **Forwards** buttons to set the cost per kWh. Press **Unit Set** to save your setting and to move onto carbon emission ratio setting.



Step 5. Carbon Emissions Ratio

Now set your carbon emissions ratio. This value can be increased or decreased using **Backwards** and **Forwards** buttons. Press the **Unit Set** button to store the value. We assumean average of 0.5 kg.CO_2/kWh, this is the default value. Press **Unit Set** to save your setting and move on to alarm setting.

Step 6. Alarm

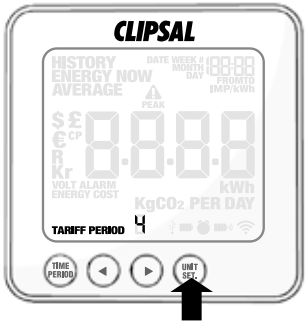
Default alarm is set at 5kW. If the alarm function is switched on, and you are using more than 5kW, the alarm will sound. This value can be decreased or increased using **Backwards** and **Forwards** buttons. Press **Unit Set** button to store the value and exit the function mode. To activate and deactivate the alarm at any time, press the alarm on/off button on the back of the unit.

8.0 Dual tariff mode

If you have a dual or multiple tariff rate meter you may want to set-up the dual tariff function.

Step 1. Activation Of Dual/Multiple Tariff

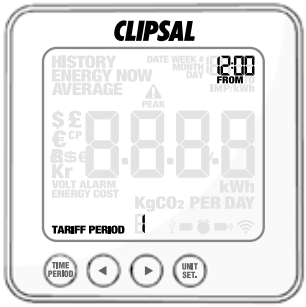
Press and hold **Unit Set** for two seconds. On release you will see the voltage setting flash. Press **Unit Set** button twice and you will move onto the tariff selection setting. Now you will see the text TARIFF PERIOD 1 flash. Press **Backwards** or **Forwards** buttons to select dual or multiple tariff set up (you can select up to four tariffs). Push **Unit Set** button to confirm. Now you have to set start and end time periods for each tariff.



Hold for two seconds

Step 2. Set Start & End Time For Tariff Period 1

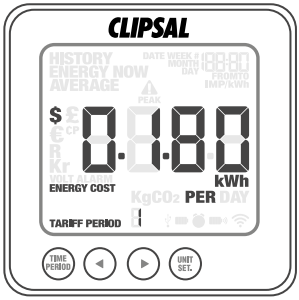
Set the 'from' time for tariff period 1 first using **Backwards** or **Forwards** buttons. Set the hour and press **Unit Set** button to save and move to minute set-up. Set minutes using **Backwards** or **Forwards** buttons and pushing **Unit Set** button to confirm and move on to setting 'to' for tariff period 1. Repeat the process for tariff period 2 and 3 if you need to. You will always set one period of settings less than the number of tariffs you have selected, as the remaining period will be saved automatically.



After having set and confirmed “from” and “to” timing you will reach tariff cost setting.

Step 3. Electricity Costs - Tariff Period 1

Use **Backwards** and **Forwards** buttons to input the cost per kWh. Press **Unit Set** button to save your setting. Tariff Period 2 will be high lighted.

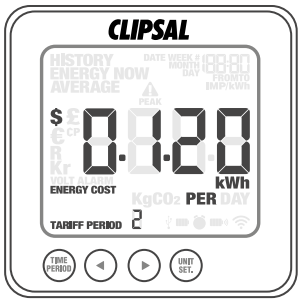


Step 4. Electricity Costs - Tariff Period 2

Use **Backwards** and **Forwards** buttons to input the cost per kWh. Press **Unit Set** button to save your setting, and move on to the next tariff if applicable.

Step 5. Electricity Costs - Tariff Period 3 & 4

Repeat the same steps as used for Tariff Period 1 & 2. Press **Unit Set** button to confirm.

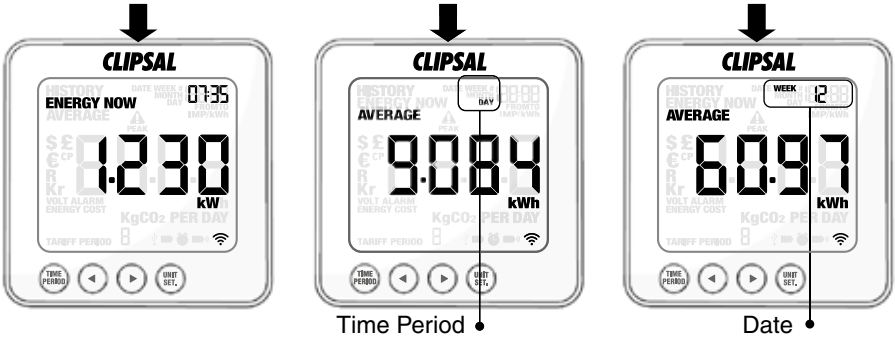


Example: If you are on a tariff which starts at 1am and finishes at 8am, set start time at 01:00 and end time at 08:00. Push the **Unit Set** button to confirm. Select the currency and set the cost per kWh you pay for each tariff (approx $0.12/kWh and $0.18/kWh for night and day time rates respectively).

When in ENERGY NOW mode, this symbol appears to indicate the most expensive tariff is in use.

9.0 How to change functions

Function button: Press the top **Function** button to change the information displayed from instant to average and to history.



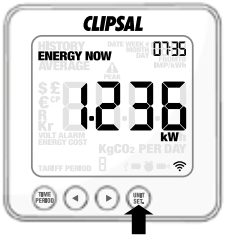
Energy Now
Press **Unit Set** button to show the instant power (kW), estimated electricity costs per day and carbon emissions per day.

Average
The information shown is the average calculated since the monitor was switched on for the first time. It shows daily, weekly and monthly average consumption in kWh, kg and CO_2. Press **Unit Set** button to show average power, costs and carbon emissions; press **Time Period** button to show daily, weekly and monthly information.

History
In this mode the monitor shows the total consumption for a specific time period. The Ecomind Electricity Monitor Kit's memory stores data for the last seven days, last seven weeks and last 24 months in kWh, kg and CO_2. Press **Unit Set** button to show history power, costs and carbon emissions; press **Time Period** button to show daily, weekly and monthly information; press **Forwards** or **Backwards** button to select date, week and month.

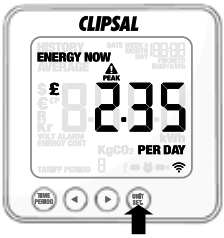
10.0 How to change modes

Unit Set button: Press **Unit Set** button to change the unit displayed during ENERGY NOW mode.

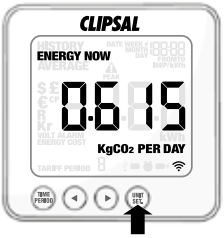


Power
Shows the power of your whole house at any instant, in kW.

Energy
In average and history modes the display shows energy consumption, in kWh.



Cost Per Day
Estimates the electricity cost of your home at that current moment in time, in $/day.



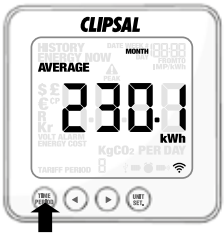
Carbon Emissions
Estimates the indirect carbon footprint for electricity consumption at that current moment in time, in kg CO_2/day.

Time Period button: Press **Time Period** button to change from daily to weekly and to monthly data during AVERAGE mode or HISTORY mode.

Day

Week

Month



Backwards and **Forwards** buttons: During HISTORY mode the **Backwards** and **Forwards** buttons are used to scroll between the dates, weeks and months.

Day

Week

Month

11.0 Download energy monitoring software

Download the Energy Monitoring Software and User Manual from the Clipsal by Schneider Electric website www.clipsal.com/Ecomind. Use the supplied USB cable to establish a connection between the energy monitor display and your PC.

12.0 FAQs

If I remove the batteries will I lose the information on the display?
If you need to change or remove the batteries, the display has an internal memory, so information stored on the display will not be lost.

How do I reset the display (clear the data and start again)?
Press **Time Period** and **Unit Set** buttons simultaneously. Hold for two seconds until 'clr' will be displayed on the screen.

How far does the device transmit?
Transmitters work up to around 40 metres within the home. The 433.5MHz range is well suited for in home use. This can cover three floors, and also well suited to buildings where meters are outside the main building.

I have three dashes (- - -) showing on the display. What does this mean?
Move the display closer to the transmitter and press the **Link** button. If the dashes remain on the display this would indicate the transmitter and receiver are not communicating. Please contact Customer Service to help locate the problem.

Backlight appears to work sometimes, and not other times. Is my display broken?
No. The backlight is on a timer to save battery life. The display should work at darker periods of the day, when any buttons are pressed. The LED backlight will be activated from 18:00hrs to 6:00hrs.

I am having trouble connecting the electricity monitor to my Windows PC via USB. What is the problem?
Remember to wait 15-20 seconds before re-connecting your electricity monitor after disconnecting it from your Windows PC. This will prevent USB connectivity issues.

13.0 Technical information

Model Name/Number: Electricity Monitor Kit
Frequency: 433.5MHz
Transmission Time: 6s. 12s. or 18s.
Transmission Range: 40m
Voltage Range: 110V-400V
Measuring Current: 50mA-95A
Accuracy: ≥ 50mA but ≤ 200mA: ± 80% at 25ºC
> 200mA but ≤ 20A: ± 90% at 25ºC
> 20A but ≤ 90A: ± 95%
Carbon ratio: 0.5kg. CO_2 / kWh

14.0 Installation notes

Date: _____
(mm/dd/yyyy)

Location Installed: _____
(Address, City)

Installed By: _____

Number of CTs: _____

Voltage Set Point: _____

Tariff Period Settings:	**Tariff Period 1**	**Tariff Period 2**	**Tariff Period 3**	**Tariff Period 4**

At the end of its serviceable life, this product should not be treated as household or general waste. It should be handed over to the applicable collection point for the recycling of electrical and electronic equipment, or returned to the supplier for disposal.

Schneider Electric (Australia) Pty Ltd

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