CENT-A-METER™ **ⅡCLIPSAL**

MODEL:
CM113 / CMR113

cent-ⓐ-meter™

ⅡCLIPSAL

CHECK

cent-ⓐ-meter™

36.8 CENT HOUR

COM 21.8℃ | 140 CENT kW h

MODE ▲ ALARM

ⅡCLIPSAL

USER MANUAL

CENT-A-METER™

II CLIPSAL

Wireless Electricity Monitor

MODEL CM113/CMR113/CMS113 Patent Pending
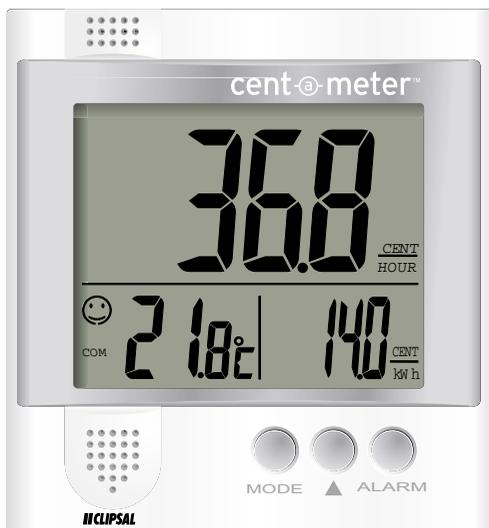
USER MANUAL

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User Manual Version 24.09.03

INTRODUCTION

Thank you for selecting the CENT-A-METER™ Wireless Electricity Monitor. This product was developed to monitor household electricity use, and can display your electricity cost-per-hour, as well as your instantaneous household electricity consumption. It can also show the amount of greenhouse gas emissions produced by your local power generating authority as a result.

It is designed to give many years of reliable service if used correctly, and performs the following functions:

- Monitors and displays electricity cost-per-hour in dollars, pounds or euros
- Monitors and displays total instantaneous household electricity consumption
- Calculates greenhouse gas emissions per hour
- Alerts user to peak load electricity limits via alarm function
- Displays temperature and humidity inside the home
- Transmits information to a portable LCD unit for easy viewing

This manual contains important safety and care information, and provides step-by-step instructions for using this product. Read the manual thoroughly, and keep it in a safe place in case you need to refer to it later.

KEY FEATURES

Main Unit - Receiver (Model CM113)
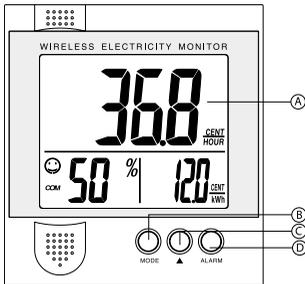
Front view	
	A. Main LCD Screen
	B. Mode Button
	a) Toggle between different display screens
	b) Enable adjustment of settings
	C. Adjust Button
	Used to adjust values
	D. Alarm Button
	Enable/Adjust alarm settings
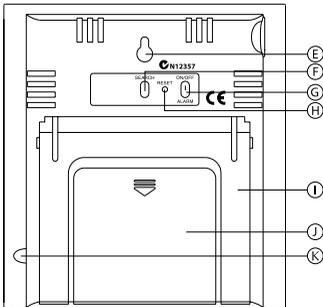
Back view	
	E. Wall-Mount Recess Hole
	For mounting the unit to a wall
	F. Search Button
	To search for and calibrate with Remote Transmitter
	G. On/Off Alarm Button
	Turn Alarm on or off
	H. Reset Hole
	Returns all settings to default values.
	I. Table Stand
	Can be pulled out and used to stand the unit on a flat surface
	J. Battery Compartment
	K. Plug pack power socket (optional)

Remote Transmitter (Model CMR113)
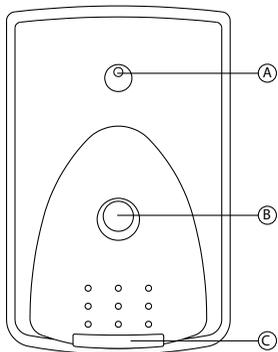
Front	Back
A. Transmit Signal Light	**D. Reset Hole**
B. Check Button Used to check reception with main unit	**E. Battery Compartment (weather proof)** Requires screwdriver to open
C. Phase Connecter Cable Outlets	
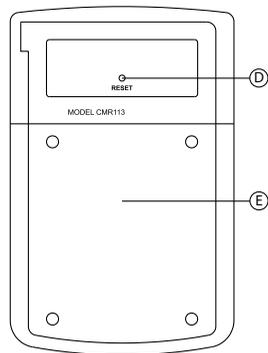
Current Sensor (Model CMS113)
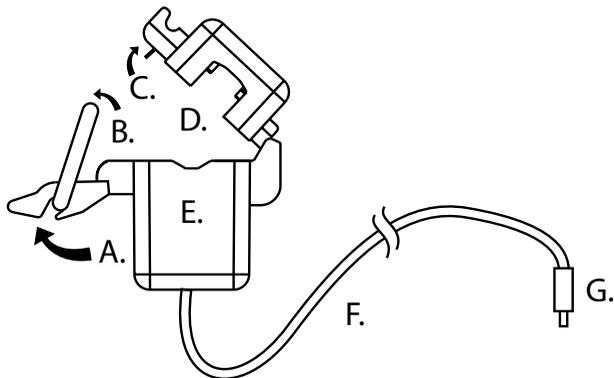
A. Hinge

B. Clip

C. Sensor top part

D. Hole for electricity phase wire

E. Sensor body

F. Sensor cable

G. Plug

LCD Display Symbols

Symbol	Description	Explanation
MAX	Maximum receiving speed	Information is received from the Remote Transmitter every 6 seconds instead of every 1 minute. **(Use with MAX set off to save battery life).**
HI	Alarm limit activated	The electricity cost-per-hour peak load limit is activated. The alarm will sound if it is exceeded.
PENCE/CENT/HOUR	Cost per hour	The instantaneous cost per hour of electricity being used in your household in dollars, pounds sterling or euros.
PENCE CENT /kWh	Cents/ pence per kWh	The amount (tariff) that your local electricity retailer charges for electricity per kWh (Kilowatts hour).
kW	Kilowatts	The total amount of energy being used in kilowatts
GREENHOUSE GAS	Greenhouse gas display	You are displaying greenhouse gas emissions information.
AMP	Amperes	The amount of current passing into your home.
VOLT	Voltage	The voltage setting for your household power line.
KG/HOUR	Kilograms per hour	The amount of greenhouse gas emissions per hour in kilograms, **emitted by the power station.**
TON/YEAR	Tons per year	The amount of greenhouse gas emissions per year in tonnes, **emitted by the power station.**
%	Humidity	The current humidity level in your household.
℃	Temperature (Celsius)	The temperature in your household.
☺ COM	Humidity & Temperature condition	Shows if the environment is comfortable.
☹ DRY	Humidity & Temperature condition	Shows if the environment is dry.
☺ WET	Humidity & Temperature condition	Shows if the environment is wet.
-------	Alarm disabled/ Transmission broken	The alarm is disabled, or the transmission from the Remote Transmitter has been broken.
REMOTE MAIN ▱	Low battery	The battery for either the 'main' or 'remote' units is low and should be replaced.

WARNINGS

To ensure you use your product correctly and safely, read these Warnings and the User Manual before using the product. These warnings provide important safety information and should be observed at all times.

⚠ **WARNINGS**

- **The Current Sensor must be attached to the main household power line by a licensed electrical person.**

- Do not attempt to repair the product yourself. Contact the retailer or our customer service department if it requires servicing.

- Take precautions when handling all battery types. They can cause injuries, burns, or property damage as a result of contact with conducting materials, heat, corrosive materials or explosives. Remove the batteries before storing the product for long periods of time.

- Do not immerse the device in water.

- Do not, under any circumstances, touch the exposed electronic circuitry of the device as there is a danger of electric shock should it become exposed.

- Take special care when handling a damaged LCD display, as the liquid crystals can be harmful to your health.

- Do not use or store the device, including the remote sensor, in locations that may adversely affect the product such as rain, snow, desert, and magnetic fields.

- Do not use this device in aircrafts or hospitals. The use of radio frequency products can cause malfunctions in the control devices of other equipment.

- Do not subject the product to impact or shock.

- When disposing of this product, do so in accordance with your local waste disposal regulations.

SAFETY AND CARE INSTRUCTIONS

Safety precautions
Please observe the following safety precautions when setting up and using this product.

- LCD panel – The LCD panel is made of glass, and may break if the unit is dropped or impacted.

- Heat sources – Keep the product away from heat sources such as radiators, stoves, heaters, and other heat-generating products.

- Water and moisture – Do not use the product in or near water or in high moisture areas such as a bathroom.

- Power source – The product may be susceptible to power surges, and the Current Sensor cable should be disconnected from the Transmitter during severe storms.

Caring for this product
To ensure you receive the maximum benefit from using this product, please observe the following guidelines.

- Cleaning – Disconnect the Current Sensor and remove the batteries from the Remote Transmitter and the Main Unit Receiver before cleaning. Use a damp cloth. Do not use liquid cleaning agents, benzene, thinner, or aerosols.

- Ventilation – The vents and other openings are designed for ventilation and should not be blocked or covered. Blocking the vents can cause the product to overheat and can damage the unit.

- Repair – Do not attempt to repair the product or modify the circuitry by yourself. Contact the retailer or a qualified electrical person if the product requires servicing. Only use replacement parts that are recommended by the manufacturer.

- Do not scratch hard objects against the LCD display as this may cause damage.

HOW THE PRODUCT WORKS

Overview

This product uses 'phase' current transformer sensing technology to detect and monitor a magnetic field around your household electricity power cable. It measures the amps being used and, by reference to the system voltage, calculates the amount of power being used, the cost, and the amount of greenhouse gas emissions. It then transmits this information from the Transmitter to a cordless Main Unit Receiver on a frequency of 433MHz, from up to 30 meters away (unbroken transmission).

NOTE The product is primarily intended as an educational device to aid understanding of the cost of operating electrical appliances in the home. As such, it is not intended to replace your accurate electricity revenue meter, so it cannot be used to check your electricity account.

Voltage and Current

Voltage (volt) is the measure of electrical potential. **Current** signifies the amount of electricity flowing through a conductive material, such as a wire. Electrical current is measured in amperes or "**amps**" for short. Both Amps and Volts are necessary to provide electricity for your household appliances. Power is measured in Watts, and is the product of Volts times Amps. For a particular location, the voltage is usually constant – so the amount of power used is directly proportional to the current used.

Watts and Kilowatts

Refer to the following table:

Watts	Kilowatt (kW)	Kilowatts hour (kWh)
A Watt is the standard unit of measurement for the amount of energy (electric or otherwise) being transferred to or from somewhere each second.	A Kilowatt (kW) is simply a larger unit of measurement (1000 watts = one kilowatt).	Kilowatts hour (kWh) represents the use of 1000 watts of electricity for one whole hour.

NOTE 1 kWh is the equivalent of ten(10)X100-watt bulbs operating at the same time for one hour.

Household power cable and 'phase'

Most household electricity supplies use either single 'phase' or three 'phase' current. In single 'phase' supplies, the current flows to and from your household appliances using a 'neutral' and 'power' line. The neutral line has a voltage close to 0 while the 'power' line carries a fluctuating voltage or 'phase' at about 240 volts. The difference between these two lines makes the current flow through your appliances.

In three 'phase' supplies, current flows to and from a device through a group of three lines - each one carrying a fluctuating voltage or 'phase'. The Current Sensor should be connected to each of the three phase lines before using the CENT-A-METER™ by a licensed electrical person, as contact with high voltage wires can cause severe burns or death.

Greenhouse gas

Fossil fuel power stations emit gases such as carbon dioxide when producing electricity. This causes an atmospheric imbalance, which in turn has been linked to global warming (global temperature rise).

Every power station has a slightly different ratio of emissions to electricity production, depending on the type of fuel used to generate electricity. Sustainable energy sources such as hydro, solar and wind power do not create any emissions.

The default greenhouse emission rate on the Portable Main Unit is set to 1 kilogram of greenhouse gas for every 1KW of electricity produced (1:00). This can be changed depending upon the fuel or energy source used by your power generating authority **(see customized settings)**.

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GETTING STARTED

You will need

As you unpack and begin to set up your new CENT-A-METER™ you will need the following equipment:

- User manual – for instructions on how to set up and use the product.
- A hammer and 2x 2mm head nails – to fix the mounting bracket/unit to the wall. Alternatively you may screw the bracket to the wall.
- A small Philip's-head screw driver - to open the battery compartment of the Transmitter.
- An electrician – to attach the Phase Connector Sensor to the wires within the meter or fuse box.

Unpacking the product

When you unpack your CENT-A-METER™, make sure to keep all the packing materials in a safe place, in case you need to later transport or return it for servicing.

In the box, you will find:

Main Unit Receiver	Remote Transmitter (with Wall Bracket)	Current Sensor	Batteries x 6 AA AA alkaline	User manual
				MANUAL
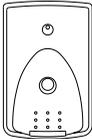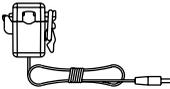
Batteries

The Portable Main Unit Receiver and the Remote Transmitter both use 3 x UM-3/AA 1.5V alkaline batteries. Do not use other types of batteries. No other power source is necessary to run the units.

Loading the batteries:

Main Unit- Receiver		**Remote Transmitter**	
Diagram	**Instructions**	**Diagram**	**Instructions**
	Install the batteries by matching the correct polarity. Always use the correct battery type (**3 x UM-3/ AA 1.5V alkaline batteries**). **Warning:** Reversing the polarity may damage the product.		Remove the cover with a screwdriver. Then follow the same instructions as the main unit. Once done, replace the cover and screw back the cover onto the unit.
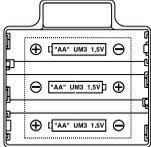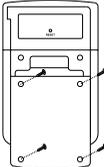
NOTE Replace the batteries whenever the weak battery mark 'main' or 'remote' (🔋) shows, the display is dim, or the display does not illuminate when the power is on. Replace all the batteries at the same time – it is **unwise** to mix old and new batteries.

Contact your local waste disposal authority for instructions on how to dispose of used batteries. Used batteries can be harmful to the environment, and should not be thrown out with household rubbish.

AC Adapter
The main unit receiver can operate with a 6.0V AC/DC adapter, which can be purchased separately.

Mounting the CENT-A-METER™

The Main Unit Receiver can either be placed on a flat surface with the back stand pulled out or mounted as shown below:
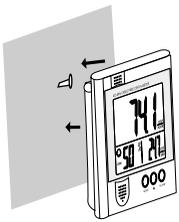
Diagram	Instructions
	1. Mount by using nails or screws.
	2. Hammer in nail or screw halfway.
	3. Attach main unit

The Remote Transmitter should be placed on a flat surface or mounted on a wall using the wall bracket provided within 30 metres of the Main Unit Receiver. It should be mounted outside of the electrical meter or fuse box, if these are made of metal. **WARNING: If installed inside a metal meter box, the signal transmission distance between the remote transmitter and the main receiver will be reduced. A site review will need to be carried out by the installer regarding the suitability of this type of installation.**

To fix the wall bracket follow the instructions below:
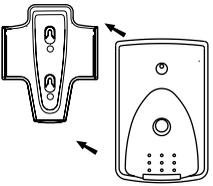
Diagram	Instructions
	1. Position the wall bracket.
	2. Insert nail or screw through the mounting hole.
	3. Hammer in nail or fix the screw halfway.
	4. Attach wall bracket.
	5. Slide Remote Electricity Unit into place.

Attaching the Current Sensor

To attach the Current Sensor to the household power line (see HOW THE PRODUCT WORKS) follow the steps below: **WARNING: <u>The Current Sensor must be attached to the main household power line by a licensed electrical person.</u>**

|			
①	Locate the main household active or 'phase' cable (see How the product works).	②	Unclasp the housing, following the letters in the Diagram above. OPEN
③	Thread cable through. Re-clasp cable housing. CLOSE	④	Current Sensor with cable attached.
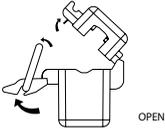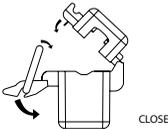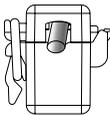
Plugging the Current Sensor into the Remote Transmitter

Once the Current Sensor is attached to the household power line you may plug it into any of the three outlets in the Remote Electricity Monitor by following the steps below:
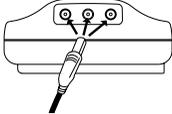
Diagram	Instructions
	1. Choose one of the three outlets.
	2.. Plug in.

NOTE **The signal wiring (approx. 1 volt, 1 milliamp) on the current sensor is double insulated suitable for installation in a 240 volt domestic power supply meter box. When passing through an enclosure opening, the wiring should be protected from sharp edges by fixed bushes.**

It is possible to purchase further Current Sensors and use them simultaneously on multiple power lines (up to 3). This may be useful in buildings with high rates of power consumption such as factories or offices.

If more than one Current Sensor is used the total power consumption displayed will be a combined reading.

CUSTOMISING SETTINGS

When the Remote Transmitter and Current Sensor have been connected, the CENT-A-METER™ Main Unit Receiver immediately starts receiving information. The LCD screen displays electricity consumption and greenhouse gas readings based on default factory settings (see SPECIFICATIONS). In order to obtain a more accurate reading, it is advisable to make more customised settings.

Setting the Voltage

The 'voltage' of the power line (see **Voltage and current**) can be set by following the instructions:

NOTE As the default value is 240V, a voltage setting is not required for a product used in Australia.
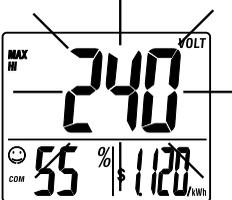
Diagram	Instructions
	1. Press **mode** and **alarm** simultaneously. The current voltage setting is displayed.
	2. Press **mode** again. The voltage value blinks.
	3. Use the **arrow key** to change the value. (110-250)
	4. Press **mode** when finished.

Setting the electricity cost-per-hour

The CENT-A-METER™ initially displays the electricity cost-per-hour as a default or factory setting of 12 cents per kWh (**see Watts and Kilowatts**). To find the local electricity charge per kWh, refer to your last electricity bill and then change the currency unit and value by following the instructions below:

Setting the cost-per-hour currency unit

NOTE As the default value is $, the currency unit is not required for a product used in Australia.
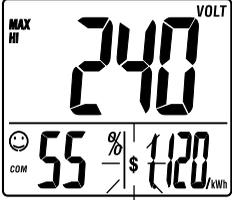
Diagram	Instructions
	1. Press **mode** and **alarm** simultaneously.
	2. The currency value blinks. Use the **arrow key** to change the flashing value (in **$, £, or €**)
	3. Press **mode** to set value.
	4. Press **mode** when finished.

Setting the cost-per-hour value
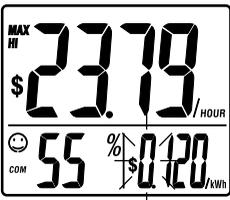
Diagram	Instructions
	1. Press and hold **mode** for 2 seconds. The first digit of the electricity cost-per-hour flashes.
	2. Use the **arrow key** to change the flashing value (0-9). Press **mode** to set value. Repeat for all digits.
	3. Press **mode** when finished.

Setting the greenhouse gas emission per kW rate (see Greenhouse Gas)

To set the unit and rate of greenhouse gas emissions per electric current production (see **Greenhouse gas**) follow the instructions below:
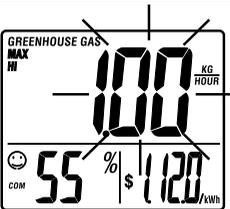
| Diagram	Instructions
	1. Press **mode** to change to the Greenhouse Gas display.
	2. Press and hold **mode** for 2 seconds.
	3. The Greenhouse Gas emission unit blinks. Use the **arrow key** to toggle between units (Kg/Hour or Ton/Year). Press **mode** to confirm.
	4. The Greenhouse Gas value blinks. Use the **arrow key** to change the value.
	5. Press **mode** again to return to the Greenhouse gas display.

NOTE It may be necessary to change this setting for a product used in Australia, where average greenhouse gas emissions are approximately 1 kilogram per kW. If a precise rate is required, or if you have purchased a "Green Energy" product, contact your local electricity retailer.

Setting the Battery power save mode

You can save battery power by changing the receiving speed of the Main Unit Receiver from every 6 seconds (MAX) to every minute. To change the setting, follow the instructions below:
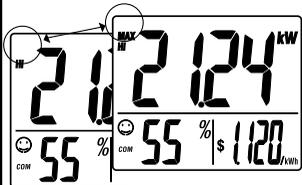
Diagram	Instructions
	1. When 'MAX' icon is displayed, press and hold the arrow key for 2 seconds.
	2. The 'MAX' icon disappears. Repeat these steps to re-enable "MAX' receiving speed.

MAIN UNIT INFORMATION

After customizing your CENT-A-METER™ three types information can be displayed on the main unit:

- cost of household power consumption in dollars/pounds/euros per hour
- amount of greenhouse gas emissions produced in kilograms per hour or tonnes per year
- household power consumption in kilowatts or amps (**see To display power consumption in amps**)

To display the information, simply use the **mode** key to switch between screens.
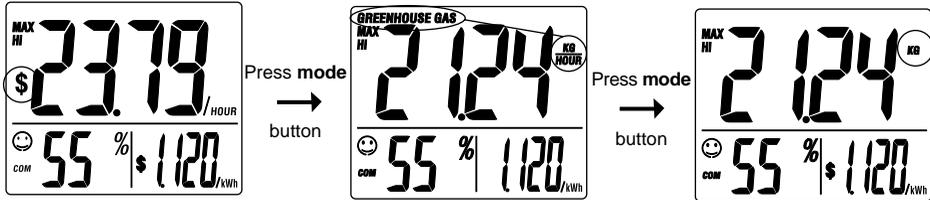
To display power consumption in amps

Household power consumption can be displayed in terms of amps instead of kilowatts (**see HOW THE PRODUCT WORKS**). To display the amount of electrical current passing into your home (amps), instead of the amount of energy consumed (kW) follow the instructions below:

Diagram	Instructions
	1. Press **mode** to change to kW display. 2. Press and hold **mode** for 2 seconds. The AMP display is shown.
	3. Press **mode** again to return to kW display.

SETTING THE ALARM

The CENT-A-METER™ comes equipped with an alarm that alerts users when the electricity cost-per-hour exceeds a pre-set limit. This helps control energy consumption and may reduce electricity bills and the possibility of blackouts during peak load periods.

To set the alarm limit

To set the alarm limit follow the instructions below:

Diagram	Instructions
	1. Press and hold alarm key for 2 secs.
	2. Use the arrow key to change a value.
	3. Press alarm again and continue until all values are set.

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Activating the alarm

To activate the alarm follow the instructions below:

Diagram	Instructions
	1. On the back of the unit locate the grey alarm on/off button (furthest to the right).
	2. Press the alarm on/off button once to activate or deactivate the alarm.
	3. The Hi icon will appear when the alarm is activated and disappear when it is deactivated.

NOTE The alarm will sound and the display will flash when the alarm limit is exceeded. It will cease if the cost-per-hour falls below the limit, or you can press any button to stop the alarm. A "----" message means the alarm is disabled.

USING THE SEARCH AND CHECK FUNCTIONS

The CENT-A-METER™ Main Unit Receiver and Remote Transmitter include search and check functions to quickly re-establish a connection should the transmission be broken (i.e. if the units are too far apart, or experience interference from other devices such as a radio or television).

Using the search function

To activate the search and check function, follow the instructions below:

Diagram	Instructions
	1. Locate the **search** button on the back of the Portable Main Unit (left hand grey button). Press once and hold for 2 seconds (unit will beep twice).
	2. Connection with the Remote Electricity Monitor will be re-established.
CHECK BUTTON	3. If no connection can be made, locate the **check** button on the Remote Electricity Monitor. Press once.
	4. Press the **search** button on the back of the Portable Main Unit again as in step 1.

NOTE Make sure you press the Search button within 30 seconds of activating the Check function. If a connection is not made try resetting both the Main Unit Receiver and the Remote Transmitter. If you are resetting to re-establish a connection between the units, the Main Unit Receiver must be reset first.

Resetting the Main Unit Receiver and the Remote Transmitter

To reset both units to default factory settings follow the instructions below:
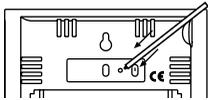
Diagram	Instructions
	1. Locate the reset point on the back of the Main Unit.
	2. Push a blunt stylus (pen) gently into the reset point.
	3.Follow the same steps for the Remote Transmitter.

TEMPERATURE AND HUMIDITY

An added feature of the CENT-A-METER™ is a temperature and humidity display. Both temperature and humidity are alternately displayed in the bottom left hand corner of the portable Main Unit for three seconds. Humidity is shown as %, and temperature in Celsius ºC (a factory setting of Fahrenheit ºF is also available).
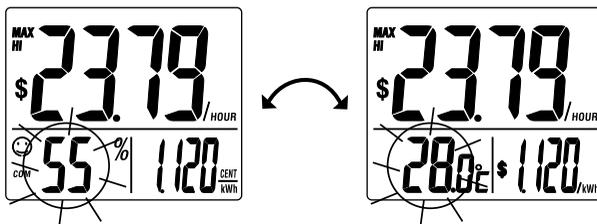
An extra feature of this display is a series of icons to indicate if the environment is comfortable, dry or wet:

Zone	Temperature	Relative Humidity
☺ COM	20-25 ˚C (68-77 ˚F)	40-70%
☹ DRY	Any	<40%
😕 WET	Any	>70%

NOTE The readings given are for the surrounding environment and may a change according to the position of the unit. HHH or LLL will be shown if the temperature is over or under range (+50ºC to –5ºC).

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TROUBLESHOOTING GUIDE

This section includes a list of frequently asked questions for problems you may encounter with your unit.

If your CENT-A-METER™ is not operating as you think it should, check here before arranging for servicing.

Problem	Symptom	Check this	Remedy
No power or no reading	Power will not turn on or no display reading on LCD screen	Batteries are exhausted.	Replace with new batteries.
		Batteries are inserted incorrectly.	Insert the batteries correctly (**-> Batteries**).
"----" reading	"----" display readings on LCD screen or, Display does not change when power use is changed	Remote and Main Unit are not synchronised or transmission link has been broken	Reset both units
"----" reading	Current not detected	Check cable from sensor into transmitter	Call Electrician to check
Alarm	"----" reading in Alarm mode	Alarm disabled	Activate alarm
"----" flashing	Automatic search underway	-	Allow search to run to completion
Main unit receiver receives data from another remote transmitter	Display does not respond as expected	Incorrect transmitter detected during installation or following battery replacement or "reset"	Refer to installation instructions

NOTE After resetting the main unit receiver it may take up to 2 minutes to re-establish the communications link. This can be expedited by pressing the "CHECK" button on the remote transmitter for 2 seconds (beep) to force transmissions every 2 seconds.

SPECIFICATIONS

Dimensions

Main Unit- Receiver (Model CM113)

Width x Height x Depth	107 W x 117 H x 30 D mm
Weight	160 g

Remote Transmitter (Model CMR113)

Width x Height x Depth	78 W x 113 H x 40 D mm
Weight	110 g

Current Sensor (Model CMS113)

Width x Height x Depth	50 W x 50 H x 30 D mm
Weight	20 g

Power On Factory Default Settings:

AC voltage	240v
1kg Co2	1 kW/hr
GHG unit (greenhouse gas)	Kg/Hour
GHG conversion	1 Kg CO_2 = 1 kW/hr
Tariff charge (cost-per-hour)	12.0 cents per kWh
Temperature unit	ºC
Currency	$ and cent
Hi alarm	$2.00/hour, HI=on
Receiving cycle	MAX=6 second
Display Mode	Cost rate display

Current (RMS) Accuracy:

	Tolerance
Less than 1A	Not Specified
1A to <3A	<10 %
3A to 71A	<5 %

Radio frequency:

System	433 MHz radio frequency
Range	30 meters in open area
	(partitions, walls, and electrical appliances may affect reception range)

Power:

Power supply	Main unit – 3 x AA / UM-3 1.5v batteries (or 6.0V AC/DC adapter)
	Remote unit – 3 x AA / UM-3 1.5v batteries

Operating environment:

Operation temperature	5° C … 45° C (41° F…113° F) at 85% relative humidity
Storage temperature	-5° C ….60° C (23° F … 140° F) at 85% relative humidity

Compliance:

 N12357   CE   Manufactured to ISO9000 Quality Assurance Standards and applicable Australian and New Zealand Communications and Electricity Authorities Regulations.

DEFAULT VALUES

FUNCTION	DEFAULT VALUES	CUSTOMISED SETTINGS
AC voltage	240V	
Greenhouse gas emission rate per kW	1.0	
Greenhouse gas unit	kg/hour	
Tariff charge (cost per kWh)	12 cents per kWh	
Currency	$ and cent	
Hi alarm	$2.00/hour, HI on	
Battery save (receiver)	MAX off	

WARRANTY

LIMITED ONE YEAR WARRANTY

The benefits conferred by this warranty are in addition to all implied warranties, other rights and remedies in respect of the product, which the consumer has under the Trade Practices Act and similar State and Territory Laws. The original purchaser of this CENT-A-METER™, is provided with the following warranty, subject to the following conditions:

Gerard Industries Pty Ltd warrant this product for a period of 1 year from date of purchase for all defective in workmanship or materials. All defective parts will be replaced or repaired free of charge.

The following exclusions do not include the purchaser from those statutory rights consumers have under the Trade Practices Act or similar State and Territory Laws.

Warranty Conditions

1. The product must be installed by a competent Electrical Trades Person and operated in strict accordance with instructions. Gerard Industries Pty Ltd will not accept liability for any damage or injury caused by misuse or non-compliance with the instructions.

2. Warranty will only be given where proof of purchase date is provided. Eg. original invoice or copy.

3. This instrument must not be modified in any way.

4. Batteries are specifically excluded from this warranty.

5. Gerard Industries will not be liable for indirect, consequential or incidental damages.

6. Gerard Industries Pty Ltd reserves the right to change specifications or designs described in this manual without notice or obligation.

CLIPSAL products by Gerard Industries Pty Ltd ACN 007873529

12 Park Terrace, Bowden, South Australia 5007
Telephone (08) 82690511 Facsimile (08) 83401724
Internet http://www.clipsal.com E-Mail plugin@clipsal.com.au

PROOF OF PURCHASE

If you need any service or warranty support, please contact the Supplier giving the following details:

Product Name: CENT-A-METER™ -Model CM113, CMR113

Purchaser Name and Address: ....

....

....

Supplier Name and Address: ....

....

....

Date of Purchase: ....

HANDY HINTS FOR ENERGY SAVINGS

Acknowledgment: This information is based on data provided by the Energy Smart Information Centre, Sustainable Energy Development Authority Level 6, 45 Clarence Street, Sydney PO Box N442, Grosvenor Place, NSW 1220 Australia. They offer a free advisory service provided by the NSW Government. Energy experts can provide information on a wide range of topics including Energy Smart designs for new homes and renovations, appliance selection, solar and wind power systems, choosing heating and cooling systems, insulation, lighting and water saving devices.

NOTE Prices quoted are based on an electricity tariff cost of 20 cents/kWh. For a different tariff, you will need to adjust $'s shown accordingly. For more information visit www.energysmart.com.au

ENERGY CONSERVATION

Saving energy in your home can be so easy. These hints show you how. At a glance you will see typical running costs for hot water, heating and household appliances. There are lots of handy hints which will make a big difference to your household energy costs.

Using less energy also means less pollution and reduced greenhouse gas emissions. So start now and save energy, the environment and hundreds of dollars on energy bills.

NOTE The information provided below relates to a "typical household". Each individual household will vary. The information is intended only to provide guidance to the householder. All costs refer to winter costs, and all costs are quarterly. Bear in mind that winter energy bills are usually higher than summer bills.

COST OF OPERATING APPLIANCES (based on an electricity tariff of 20 cents/kWh)	HOW TO MAKE SAVINGS
THE LIVING ROOM Costs about $256 per winter quarter. Space heater costs $160 a quarter. Stereo costs $6 a quarter Video recorder costs $14 a quarter Lighting (3 x 60 watt lamps) costs $16 a quarter Ceiling fan costs $6 a quarter Heated aquarium costs $22 a quarter Colour TV costs $32 a quarter	You could save on these costs if you: Put in ceiling insulation Block off any open chimney Seal gaps around external doors and windows and stop draughts Prevent heat loss through windows by using heavy drapes fitted with pelmets Keep all doors to unheated areas closed Use the heater on a lower thermostat setting Choose an energy efficient model if installing a gas heater or reverse cycle air conditioner - one that has 5 or 6 star rating (some are ~ 40% cheaper to run) Use a ceiling fan to help distribute heat Regularly maintain the heater Change to more efficient lighting by replacing globes with compact fluorescent globes

THE KITCHEN Costs about $150 per winter quarter Radiator costs $18 a quarter Dishwasher with hot water costs $18 a quarter Gas cooker costs $40 a quarter Fan and light in rangehood costs $6 a quarter Electric kettle costs $12 a quarter Automatic toaster costs $3 a quarter Lighting (3 x 75 watt lamps) costs $12 a quarter Regular washing up costs $12 a quarter (An automatic dishwasher costs much more) Microwave oven costs $4 a quarter Refrigerator (2 door defrost) costs $36 a quarter	You could save on these costs if you: Use an energy efficient 5 star rating refrigerator Replace spot lights with compact fluorescent globes Use energy efficient cooking methods: • Minimum grilling • Minimum water in pots • Lids on pots • Simmer instead of boil Use the microwave whenever possible
THE BEDROOMS Costs about $78 per winter quarter Electric fan heater costs $80 a quarter Single electric blankets cost $2 a quarter Double electric blanket costs $4 a quarter Home computer costs $3.20 a quarter Lighting costs $8 a quarter Cassette radio costs $2 a quarter Electric clock costs $1 a quarter	You could save on these costs if you: Switch off lights as you leave each room Insulate and seal out draughts
THE GARAGE / WORKSHOP Costs about $34 per winter quarter Drinks refrigerator costs $30 a quarter Lighting costs $0.80 a quarter Power tools cost $2 a quarter Electric lawn mower costs $2 a quarter Car fuel for 6 cylinder family car, 12.5 litres/100 kms costs about $540 a quarter	You could save on these costs if you: Turn off drinks refrigerator except when many visitors are expected Use the car less and use alternatives such as walking, cycling and public transport Use local shops, cinemas etc. instead of distant ones Change to a more fuel-efficient car Have the car converted to LPG Drive smoothly with the flow of traffic Drive at 90 km/hr when cruising instead of 100 km/hr

OTHER FUELS AND APPLIANCES

Space heating - The cost to heat the average living room is $80 per quarter using natural gas space heaters, off-peak electric storage heaters and high efficiency (4 - 6 star rated) reverse cycle air conditioners.
Costs can be much higher using low efficiency air conditioners, LPG space heaters, slow combustion wood heaters, heating oil, portable kerosene, portable and fixed electric heaters, pot belly wood heaters and open fires cost much more to operate

Central heating - Using a space heater (such as in-slab electric or hydronic, if kept at about 18ºC) to heat a typical living room costs approximately $200 per quarter. If central heating is used to heat an entire house, costs would increase. Costs can be much higher using natural gas ducted heating, electric radiant ceiling heating, ducted reverse cycle air conditioning. Remember, central heating costs vary widely on the temperature set, the area heated, the length of time a system is on for, and the efficiency of the model.

Other factors - Although running costs of heaters are important, other factors can affect the overall cost of heating. Sleeping or formal areas often do not need to be heated to the same temperature, or at the same time, as informal areas. If you are considering purchasing a central heating system, look for one that can be 'zoned' to heat different areas of your home at different times.

Cooking - The average cost for cooking, using natural gas, is $30 per quarter whilst conventional electric of LPG gas cooking costs over double this amount. Using an electric frypan or microwave is more economical than using an electric or gas oven.

Hot water - The average hot water cost is $120 per quarter using high efficiency natural gas storage or electric off-peak systems. High efficiency natural gas continuous flow or instantaneous hot water is about 15% cheaper to run. LPG hot water or peak tariff electric hot water systems (instantaneous and continual reheat) are about 2.5 times the cost of off-peak electric hot water. A solar hot water system will reduce the annual costs on average by 50% saving an average family up to $300 a year.

Cooling - The cost to cool a typical living room with a fan is about $6 per quarter. Refrigerated air conditioning will cost about $72 per quarter whilst an evaporative cooler will cost about $24 - $30. A ducted evaporative system to cool the whole house will cost up to $72 per quarter and a ducted refrigerated system will cost around $200 a quarter.

Other appliances that hit the hip pocket can have a surprisingly large effect on energy bills. These include:
• Swimming pool filter pump - Up to $110 a quarter
• Swimming pool heater (natural gas-fuelled) - up to $650 a quarter
• Sauna - up to $110 a quarter
• Spa - $330 a quarter
• 100 watt security light, left on16 hours per day - $28 a quarter

BUYING A NEW APPLIANCE - *You can save energy, money and our environment.*

Look for an energy rating label when you buy an energy efficient model which could save you hundreds of dollars over the lifetime of the appliance. Every energy rating label has from 1 - 6 stars marked on it. The more stars you see, the more efficient the appliance and the less energy it uses. This equates to significant savings on running costs every year. These can be found on all: Refrigerators, Freezers, Dishwashers, Air Conditioners, Gas space heaters, Gas ducted heating furnaces, Gas hot water services, Clothes dryers, Washing machines. For more information visit www.energyrating.gov.au

THE GREENHOUSE EFFECT - *How saving energy helps reduce the greenhouse effect.*

Almost all of the energy we use, whether for heating, cooking or transport, contributes to the greenhouse effect. Energy sources such as coal, petroleum and natural gas produce CO2 (carbon dioxide) when burnt to provide us with useful energy. By wasting energy in our daily activities we contribute unnecessary quantities of CO2 to the atmosphere. For example, NSW contributes over 80 million tones of CO2 to the atmosphere per year. This is equivalent to the combined weight of 210,000 jumbo jets, or about 18 tonnes for every person in the State. For more information visit www.greenpower.com.au

What you can do to help reduce CO2 emissions.

• Turn off the heater at night before you go to bed (save 600 kg CO2 per quarter)

• Use a microwave for most of your cooking needs (save 810 kg CO2 per quarter)

• Use a clothes line rather than a dryer (save 260 kg CO2 per quarter)

• Drive smoothly with the flow of traffic (save 140 kg CO2 per quarter)

• Use GREEN POWER for your electricity. You can ask your electricity supplier to source the energy you use from renewable sources such as wind, solar and hydro-power. Choosing a clean energy alternative makes it easy for everyone to reduce their greenhouse gas emissions at home and work.

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