R5090

REED INSTRUMENTS

# Power Meter


WARRANTY 1 YEAR WARRANTY

# Instruction Manual

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## Introduction

Thank you for purchasing your REED R5090 Power Meter. Please read the following instructions carefully before using your instrument. By following the steps outlined in this manual your meter will provide years of reliable service.

## Product Quality

This product has been manufactured in an ISO 9001 facility and has been calibrated during the manufacturing process to meet stated product specifications.

## Safety

This manual includes important safety and instrument maintenance information. Please read each part of this manual carefully before use. Any misunderstanding of the information in this manual may lead to physical injury and/or product damage.

- Do not expose this product to water, rain, moisture, dust or extreme temperatures.
- Do not expose to naked flames or other heat sources.
- Do not drop or subject the device to undue shock.
- Keep device away from magnets at all times.
- Keep away from direct sunlight. Indoor use only.
- Unplug this device during lightning storms.

| | |
|---|---|
| CE | EU certification related information. |
| c ETL us Intertek 4007682 | This symbol signifies the product complies with both USA and Canada requirements. |

### *Safety Instructions*

- Never attempt to repair or modify your instrument. Dismantling your product, other than for the purpose of replacing batteries, may cause damage that will not be covered under the manufacturer's warranty. Servicing should only be provided by an authorized service center.
- Do not use if product is damaged.
- In the event of any abnormal operation, please do not use this power meter. Keep this power meter away from explosive gases, vapor and dust environments.
- The load power of electrical appliance of this product should not exceed its rated power of 1800W or a maximum current of 15A. When running under a full load, it is recommended not to exceed 1 hour of continuous use.

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## ⚠ WARNING ⚠

- Remove and immediately recycle or dispose of used batteries according to local regulations and keep away from children. Do NOT dispose of batteries in household trash or incinerate.
- Even used batteries may cause severe injury or death.
- Call a local poison control center for treatment information.
- Identification of compatible battery type: CR2032
- Nominal battery voltage: 3V
- Non-rechargeable batteries are not to be recharged.
- Do not force discharge, recharge, disassemble, heat above 140°F (60°C) or incinerate. Doing so may result in injury due to venting, leakage or explosion resulting in chemical burns.
- Ensure the batteries are installed correctly according to polarity (+ and -).
- Do not mix old and new batteries, different brands or types of batteries, such as alkaline, carbon-zinc, or rechargeable batteries.
- Remove and immediately recycle or dispose of batteries from equipment not used for an extended period of time according to local regulations.
- Always completely secure the battery compartment. If the battery compartment does not close securely, stop using the product, remove the batteries, and keep them away from children.

## Features

The R5090 is an easy-to-use power meter that accurately measures power consumption of electronic devices. Simply set the local utility rate in Kilowatt-hours (kWh) and connect an appliance to start tracking cost. The R5090 can be used to verify power quality by monitoring voltage, frequency and power factor.

- Calculates the operating costs of electronic devices
- Displays 8 important units of measure (voltage, current, watts, frequency, power factor, energy used (kWh), total cost and elapsed time)
- Over-current warning function
- Easy-to-read, dual LCD display
- Built-in battery backup
- Conforms to UL and CSA standards

## Specifications

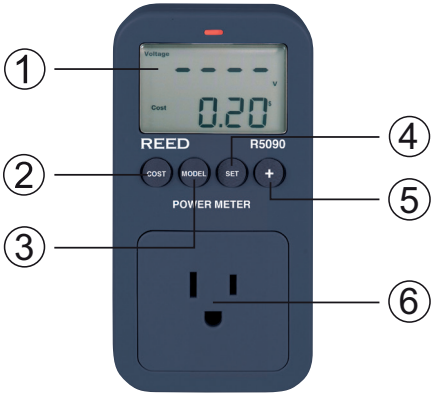
**Measuring Ranges & Accuracy**

| | |
|---|---|
| Voltage: | Range: 100 to 150VAC (60Hz); Accuracy: ±(1%rdg.+1dgt.) |
| Current: | Range: 0 to 15A; Accuracy: ±(1% rdg.+10dgt.) @ 0.010 to 0.999A; ±(1% rdg.+ 5dgt.) @ 1.00 to 15.00A |
| Power: | Range: 0 to 1800W; Accuracy: ±(1% rdg. +10dgt.) @ 1.0 to 100.0W; ±(1% rdg. +5dgt.) @ 100.0 to 999.9W; ±(1% rdg. + 1dgt.) @ 1000 ~ 1800W |
| Power Factor: | Range: 0 to 1.00; Accuracy: ±(2% rdg. + 10dgt.) @ 0.30 to 0.49; ±(2% rdg. + 5dgt.) @ 0.50 to 1 |
| Frequency: | Range: 45 to 65Hz; Accuracy: ±(1% rdg.+1dgt.) |

**Logging Ranges**

| | |
|---|---|
| Energy: | 0 to 9999kWh |
| Cost: | $0 to $9999 |
| Total Time: | 0 minutes to 9999 days |
| Display: | Dual LCD |
| Display Update: | 1 time/second |
| Overrange Indicator: | Yes |
| Power Supply: | 1 x 3V (CR2032, back up battery) |
| Overvoltage Category: | CAT. II 150V |
| Product Certifications: | CE, ETL, Conforms to UL STD.61010-1 61010-2-030; Certified to CSA STD.C22.2 NO.61010-1, 61010-2-030 |
| Storage Temperature: | 14 to 140°F (-10 to 60°C) |
| Operating Humidity Range: | 10 to 90% |
| Dimensions: | 5.1 x 2.6 x 1.5" (130 x 65 x 37mm) |
| Weight: | 1.9oz (155g) |

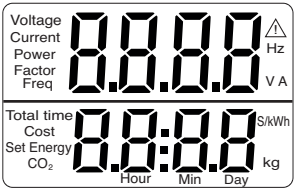
## Instrument Description




1. LCD Display
2. Cost Button
3. Model Button
4. Set Button
5. "+"/Reset/Power Button
6. Power Input Socket

## Display Description

The dual LCD display area provides two readings. The upper reading is the main display area and each unit of measurement can be toggled through by pressing the **MODEL** button. The lower reading is a secondary display area and each logging function can be toggled through by pressing the **COST** button.




## Function Keys Description

1. The **MODEL** button cycles through each function in the upper display as indicated by "Voltage", "Current", "Power", "Power Factor" and "Freq".
2. The **COST** button cycles through each function in the lower display as indicated by "Total time", "Cost", "Set", "Energy" and "CO2".
3. The **SET** button allows you to configure the CO2 & kWh cost functions.
4. The **+** button has three main functions, the first is to increase the number of digits when configuring the CO2 & kWh costs at a 0-9 cycle. The second is the reset function; reset the Energy, Cost or emission load of CO2 by holding it down. The **+** button is also used to power on the unit when power is off.

## Operating Instructions

1. Plug the power meter into a household receptacle and it will automatically start.
2. Select the desired function by pressing the **MODEL** button.
3. Return to the default function ("Voltage") by holding the **MODEL** button.

**Note:** If the unit has been in use for less than 1 day, only "Hour and Min" will be displayed as shown in Figure 1 below. Check elapsed time by pressing the **+** button as shown in Figure 2. If the time accumulated exceeds 1 day, it will be displayed in the form of "Day" as shown in Figure 3. To view the total accumulated time, press the + button to display "Day" followed by "Hour and Min".

Figure 1

Figure 2

Figure 3

### *Setting the CO2 Cost Function*

The production of energy releases greenhouse gases (among others carbon dioxide CO2), which places a burden on the environment. With this device, you are able to determine how much CO2 is released by an energy supplier with the measured kWh value. There are different CO2 equivalents depending on the type of energy. The CO2 equivalent indicates how much of a defined quantity of a greenhouse gas contributes to the greenhouse effect. Carbon dioxide serves as a comparison value. The factor for the CO2 equivalents is entered in the device in kg/kWh and displayed accordingly in kg/kWh. You can find information on the CO2 equivalents to be entered on your power bill and on the internet, technical manuals or by contacting your energy supplier.

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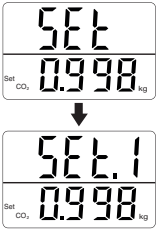
1. To set your kg/kWh cost, switch to the "CO2" cost function by pressing the **COST** button.
2. Once the CO2 parameter is visible press and hold the **SET** button.
3. Adjust the values by pressing the + button.
4. When the desired value has been set, save the data by holding the **SET** button.




### *Setting the kWh Cost Function*

To accurately calculate the actual cost of electricity consumed and to project future costs, first you must set your local utility's electric rate into the unit. The rate is typically charged as dollars (or cents) per kilowatt-hour (kWh). You can find this rate on your last utility bill or you can contact your utility supplier directly to confirm your rate.

1. To set your utility rate cost, switch to the "Cost $" function by pressing the **COST** button.
2. Press and hold the **SET** button for approx. 2 seconds to enter the utility rate cost menu.
3. Press the **SET** button to toggle through the adjustable values.
4. Adjust the applicable rate value by pressing the + button.

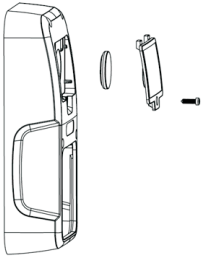
**Note:** The $ values can be set between 0 and 99.99.

5. Press the **SET** button to confirm your selection and skip to the next value.
6. When the desired value has been set, save the data by holding the **SET** button.

## Battery Replacement

1. Ensure the meter is completely disconnected from any power source before proceeding to replace the battery.
2. Using a screwdriver, carefully unscrew and remove the battery cover from the back of the meter.
3. Take out the old battery and insert a new CR2032 (3V) battery cell, ensuring the correct polarity (+/-).
4. Securely tighten the battery cover back into place with the screwdriver. Confirm that it is properly aligned and firmly closed.

**⚠WARNING INGESTION HAZARD • DEATH** or serious injury can occur • A swallowed button cell or coin battery can cause **Internal Chemical Burns** in as little as **2 hours** • Keep new and used batteries **OUT OF REACH OF CHILDREN • Seek immediate medical attention** if a battery is suspected to be swallowed or inserted inside any part of the body • For treatment information call: 1-800-498-8666.



## Product Warranty

REED Instruments guarantees this instrument to be free of defects in material or workmanship for a period of one (1) year from date of shipment. During the warranty period, REED Instruments will repair or replace, at no charge, products or parts of a product that proves to be defective because of improper material or workmanship, under normal use and maintenance. REED Instruments total liability is limited to repair or replacement of the product. REED Instruments shall not be liable for damages to goods, property, or persons due to improper use or through attempts to utilize the instrument under conditions which exceed the designed capabilities. In order to begin the warranty service process, please contact us by phone at 1-877-849-2127 or by email at info@reedinstruments.com to discuss the claim and determine the appropriate steps to process the warranty.

## Product Disposal and Recycling

Please follow local laws and regulations when disposing or recycling your instrument. Your product contains electronic components and must be disposed of separately from standard waste products.

## Product Support

If you have any questions on your product, please contact your authorized REED distributor or REED Instruments Customer Service by phone at 1-877-849-2127 or by email at info@reedinstruments.com.

Please visit **www.REEDInstruments.com** for the most up-to-date manuals, datasheets, product guides and software.