

# Multi-Function Electrical Meter

## CEM-2200



### ■ Features

- ✓ Digital graphic LCD and back-light display
- ✓ Basic accuracy  $\pm 0.2\%$
- ✓ Quick and precise response
- ✓ Effective value measurement
- ✓ Auto-power-off function
- ✓ Ground resistance measurement with 3-point and 2-point (Need option pack II)
- ✓ IrDA communication (need optional SW and USB-IrDA cable : IrDA-2000)
- ✓ Leakage Current Measurement (need optional Clamp sensor : CPM-SN-300)
- ✓ Lead wire connection status display
- ✓ Auto/manual range selection function
- ✓ Minimum value / maximum value / average value measurement
- ✓ Calibration by the self-control key

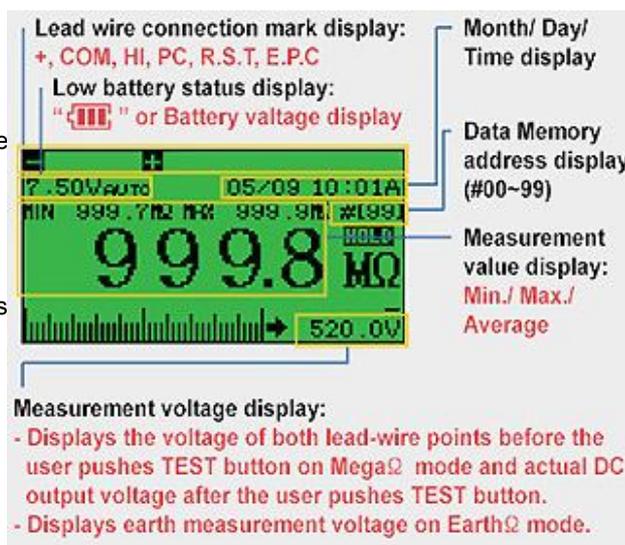
### Primary Measurement Functions

#### ► Insulation Resistance Measurement

The measurement voltage of Insulation resistance is DC 500V. And the output of measurement voltage is very accurate. This instrument can measure external voltage and actual DC output voltage and simultaneously displays the three units of insulation resistance measurement values on the LCD.

#### ► Ground Resistance Measurement

CEM-2200 is not interrupted by external noises when the user measures ground resistance. Especially, this instrument is very convenient for the user because it simultaneously displays ground resistance value and ground voltage value when the user measure ground resistance. The output measured can be stored in the internal memory.



CEM-2200 is not only a field measurement instrument of electric facilities and communication facilities and but also an electric safe instrument the user is able to use accurately and easily.

CEM-2200, a portable instrument, which is integrated measurement high technology, has various measurement functions such as AC voltage, DC voltage, RST, electroscope test, phase test, and etc. Especially, this instrument has an excellent function for the measurement of insulation resistance and ground resistance. Moreover, the user can use this instrument at dark place as it has a light function.



▶ **Digital Graphic LCD with back-light**

Digital graphic LCD with back-light 9999 count mode displays accurate and comprehensive measurement values.

▶ **No-Contact Point Push Button Switch**

No-Contact Push Button Switch perfectly prevents from switch troubles that occur by mechanical friction and is available even at the dark places as it has a back-light function in LCD and Key Button Switch.

▶ **Precise & Quick Response**

CEM-2200 realizes a precise measurement due to 24-bit high-speed AD converter by quick response and has a function of Auto Range and Manual Range' for user's convenient.

▶ **Effective Value Measurement**

CEM-2200 has an arithmetic function to calculate all waveforms including sinusoidal wave, which is a basic measurement wave and can measure effective values by true RMS(Root-mean-square)

▶ **Auto Power Off**

CEM-2200 has an Auto Power Off function, for extending battery life, which cut off its power automatically while CEM-2200 is not used according to user's setting time condition (1, 2, 3, 4, 5minutes).

▶ **Ground resistance measurement with 3-point and 2-point**

The user can conveniently set 3-terminal network or 2-terminal network for the ground resistance measurement.

▶ **Key button back-light and setting time function**

CEM-2200 has a back-light function and back-light lasting function which enables to last the light-up time of key buttons and LCD panel according to user's setting time condition (10/20/30 seconds).

▶ **IrDA Communication**

The user can transmit measurement data in CEM-2200 to PC and PDA through a built-in wireless infrared ray communication port (IrDA) loaded in this instrument so that the user can conveniently utilize his measurement data.

▶ **Lead wire connection status display**

CEM-2200 displays lead wire connection status on the graphic LCD by each measurement mode for user's convenience.

▶ **Real Time Clock (RTC)**

Real Time Clock Circuit (RTC) is built-in this instrument, which gives the user accurate measurement information with year, month, date and time. So, the user can effectively utilize measurement data with each measurement time.

▶ **Minimum value/maximum value/average value measurement**

CEM-2200 minimizes measurement errors because this instrument has data storage function, data hold function, and self-correction function. It is very efficient for the user to use this instrument as it has the measurement functions of minimum value, maximum value, and average value.

## ■ Technical Specification

Descriptions		CEM-2200
Display		Graphic LCD multifunction display, 9999 Counts
AC voltage	Measurement range(Display range)	0 V to 750 V true RMS(0.0 V to 750.0 V)
	Resolution	0.1 V
	Accuracy	±0.5%+3counts
	Measurement frequency characteristic	40 Hz ~ 1 KHz
DC voltage	Measurement range(Display range)	0 V to 1000 V (0.0 V to 999.9 V)
	Resolution	0.1 V
	Accuracy	±0.2%+2counts
Insulation resistance	Test voltages and Insulation rang (Test voltages accuracy)	500 V / 1000MΩ , (+10%, -0%)
(Mega)	Min. Resistance measurement value	0.35MΩ
	Shorting measurement current	1.4mA max.
	Measurement range (Display Range)	0MΩ to 10MΩ (0.00MΩ to 9.99MΩ)
		10MΩ to 100MΩ (10.00MΩ to 99.99MΩ)
		100MΩ to 1000MΩ (100.0MΩ to 999.9MΩ)
	Resolution	0.01MΩ to 0.1MΩ
	Accuracy (500 V) Accuracy (1000 V)	±2%+2counts (0MΩ to 10MΩ )
		±2%+3counts (10MΩ to 100MΩ )
		±2%+5counts (100MΩ to 1000MΩ ) -
	Measurement method	Using the 2 wire, 3wire measurement method
	Open terminal Measurement voltage	AC 20Vrms
	Measurement frequency	1.2 KHz sine wave
	Measurement current	2mA constant current
	Ground resistance (Earth)	Measurement range (Display Range)
100Ω to 1000Ω (100.0Ω to 999.9Ω )		
1000Ω to 2000Ω (1000Ω to 2000Ω )		
Resolution	0.01Ω to 1Ω	
Accuracy	±2%+3counts (0Ω to 100Ω )	
	±2%+2counts (100Ω to 1000Ω )	
	±2%+2counts (1000Ω to 2000Ω )	
Live line meter (HOT)		70.00~750.0V Buzzer alarm and LCD display
Phase meter (PHA)		AC 110.0V~750.0V / R.S.T GOOD, N.G LCD Display
AC current & Leakage current	Measurement range (Display range)	0Ω to 10KΩ (1Ω to 9999Ω )
		0Ω to 40Ω continuity buzzer alarm
	Resolution	1Ω
Accuracy	±2%+3counts	
Communications		IrDA Wireless communication to PDA and PC 115,200 bps
Memory storage function		100 data (# 00 ~ # 99) memory
Power supply		Battery LR6 (AA), 5 pieces 1.5V alkaline
Operating time	Ground resistance(EarthΩ )	3000 times 15-second measurements
	Insulation resistance(MegaΩ )	5000 times 15-second measurements
Operating temperature		-10℃ to + 50℃ / 14 ~ 122F, 20%~80% RH
Storage temperature		-40℃ to + 70℃ / -40F ~ 158F 10%~90% RH with batteries removed
Temperature coefficient		0.10 x (specified accuracy)/ ℃ (< 18 ℃ or > 28 ℃)
Relative humidity		Non condensing (< 10℃) 80% RH (10℃ to 30℃) 65% RH (30℃ to 40℃) 45% RH (40℃ to 50℃) Without condensation

Dimension	88(W) X 42(D) X 175(H) mm
	3.46(W) X 1.65(D) X 6.89(H) inches
Weight	Weight : 490g / 1.08 lbs (Inc batteries ) ,
	368g / 0.81 lbs (Exc. batteries)
	585g / 1.29 lbs (Inc. holster)
Safety standards	Standard
	EN 61010-1, IEC 61010-1
	Installation / Over voltage category
	CATII (1000Vdc, 750Vac) / CATIII (600 V)
	Pollution degree
Pollution degree 2	
Certification	CE, KS(Korea standard)

※ The specifications or designs of this equipment can be changed without prior notice in order to quality improvement.

## Standard Accessories

### ► Basic set

- ① User's manual
- ② Battery LRB(AA) 1.5v alkaline - 5ea
- ③ Holston(Orange, Rubber)



### ► Insulation resistance & Voltage test lead set (Pack-I) : TL-01

- ⑤ Test lead wire(red, black, MegaΩ 1.2m) - 2ea
- ⑥ Test lead wire(green, KSC3325 1.25 mm<sup>2</sup> / 1.2m) - 1ea
- ⑦ Test probe(red, black, 600V, CATIII) - 2ea
- ⑧ Alligator clip(black, EN61010 CATIII) - 1ea



## Optional

### ► Ground resistance test lead set (Pack-II) : TL-02

- ⑨ Test lead wire(red, 600V, 20m, 1.25 mm<sup>2</sup>) - 1ea  
Test lead wire(yellow, 600V, 10m, 1.25 mm<sup>2</sup>) - 1ea  
Test lead wire green, 600V, 5m, 1.25 mm<sup>2</sup>) - 1ea
- ⑩ Earth test rod - 2ea
- ⑪ Soft carrying bag - 1ea



### ► Communication set & Leakage Current Measurement

- ⑫ IrDA to USB adaptor, Cable, Software(CEM-SW2000) for PC use : IrDA-2000
- ⑬ Clamp Sensor for leakage current measurement : CPM-SN-300



IrDA-2000



⑬

CPM-SN-300



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