



The earth resistance from 0.05 to  $1200\Omega$  can be measured without the auxiliary earth spikes. (The Multiple Earthing System.)

#### OTrue RMS

Accurate true RMS readings of AC current including distorted waveform from 1mA to 30.0A

#### Noise Check Function

A function to detect current, which effects on an earth resistance measurement and display "NOISE" mark on the LCD.

#### Memory function

Save and display up to 100 measurement data.

- OData hold function / Buzzer function / Back light function
- Compliant with Safety Standards of IEC 61010-1: CAT.IV 300V Pollution degree2



MODEL 4200

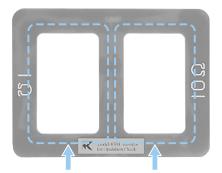
### **Specification**

Function	Range	Resolution	Measuring range	Accuracy
Earth resistance	20Ω	$0.01(\Omega)*$	$0.00\sim 20.99(\Omega)$	±1.5%±0.05Ω
Auto range	200Ω	0.1(Ω)	16.0~99.9(Ω)	±2%±0.5Ω
			$100.0\sim 209.9(\Omega)$	±3%±2Ω
	1200Ω	1(Ω)	160~399(Ω)	±5%±5Ω
			400~599(Ω)	±10%±10Ω
		10(Ω)	600~1260(Ω)	-
AC current	100mA	0.1 (mA)	0.0~104.9(mA)	±2%±0.7mA
(50Hz / 60Hz)	1000mA	1(mA)	80~1049(mA)	
Auto range	10A	0.01(A)	0.80~10.49(A)	±2%
	30A	0.1(A)	8.0~31.5(A)	
Operating system				
	Current detection, (Frequency : Approx.2400Hz)			
	Dual Integration			
	AC current function : Successive Approximation			
Over-range indication	"OL" is displayed when input exceeds the upper limit of a measuring range			
Response time	Approx. 7 seconds (Earth resistance) Approx. 2 seconds (AC current)			
Sample rate	Approx. 1 times per second			
Power source	DC6V: R6P (sizeAA manganese battery) × 4pcs, or LR6 (sizeAA alkaline battery) × 4pcs			
Current consumption	Approx. 50mA (max. 100mA)			
Measurement time	Approx. 12 hours (when R6P is used) Approx. 24 hours (when LR6 is used)			
Auto power-off	Turns power off about 10 minutes after the last button operation.			
Applicable standards	IEC 61010-1 : 2001 (CAT. <b>IV</b> 300V Pollution degree2)			
Withstand voltage				
0	Between the Transformer jaws fitted parts and Case enclosure (except for jaws)			
Conductor size Dimension	Approx. 32mm max.			
	246(L) × 120(W) × 54(D)mm			
Weight	Approx. 780g (including batteries)			
Accessories	Battery R6P: 4pcs Instruction manual: 1pc			
	Resister for operation check (MODEL 8304) : 1pc			

Hard case (MODEL 9128): 1pc ★Crest factor ≤ 3 (50Hz / 60Hz, peak value shall not exceed 60A) \*\*Counts equal to or less than 4 counts are corrected to 0.

#### **Accessories**

Resistor for operation check



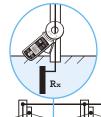
 $1\Omega$  loop  $10\Omega$  loop



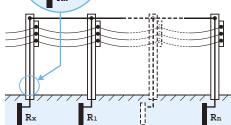
Hard case



# Why earth resistance can be found by only clamping it?



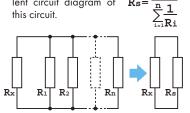
Rx, is defined as earth resistance under test, and R<sub>1</sub>, R<sub>2</sub>...R<sub>n</sub> are defined as earth resistance of other measuring objects.



Of these earth resistances,  $R_1$ ,  $R_2$ ,  $\cdots$   $R_n$ can be considered that they are connected in parallel.

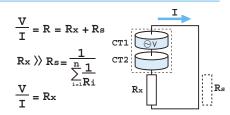
And can be regarded as a combined resistance Rs. The Rs can be regarded small enough against  $\mathbf{R}_{\mathbf{x}}$  since a combined resistance consists of several resistances.

Following is an equivalent circuit diagram of this circuit.



Voltage V is applied to the object (Resistance Rx) measured from the voltage injection transformer CT1, and the current I corresponding to the earth resistance is flowed.

The current I is detected with detection transformer  $\mathtt{CT2}$ , and object (Resistance  $\mathtt{Rx}$ ) measured can be put out by the calculation. (refer to the right chart)



Please read the "Safety Warnings" in the instruction manual supplied with the instrument thoroughly and Safety Warnings: completely for correct use. Failure to follow the safety rules can cause fire, trouble, electrical shock, etc. Therefore, make sure to operate the instrument on a correct power supply and voltage rating marked on each instrument.

For inquires or orders:



## **KYORITSU ELECTRICAL INSTRUMENTS** WORKS, LTD.

No.5-20, Nakane 2-chome, Meguro-ku, Tokyo, 152-0031 Japan Phone:81-3-3723-0131 Fax:81-3-3723-0152 URL:http://www.kew-ltd.co.jp E-mail:info@kew-ltd.co.jp Factories: Uwajima & Ehime