



Quality and reliability is our tradition

KYORITSU

# EARTH TESTER MODEL 4200



**TRUERMS**

- The earth resistance from 0.05 to 1200Ω can be measured without the auxiliary earth spikes. (The Multiple Earthing System.)
- **True 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.
- Data hold function / Buzzer function / Back light function
- Compliant with Safety Standards of IEC 61010-1 : CAT.IV 300V Pollution degree2



KEW EARTH CLAMP TESTER

**MODEL 4200**

KYORITSU ELECTRICAL INSTRUMENTS WORKS,LTD.

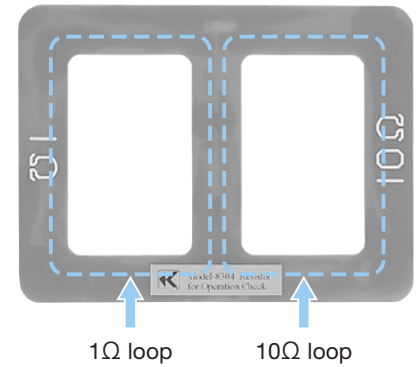
## Specification

Function	Range	Resolution	Measuring range	Accuracy	
Earth resistance Auto range	20Ω	0.01(Ω)※	0.00~20.99(Ω)	±1.5%±0.05Ω	
	200Ω	0.1(Ω)	16.0~99.9(Ω)	±2%±0.5Ω	
			100.0~209.9(Ω)	±3%±2Ω	
	1200Ω	1(Ω)	160~399(Ω)	±5%±5Ω	
400~599(Ω)			±10%±10Ω		
600~1260(Ω)			-		
0.0~104.9(mA)			±2%±0.7mA		
AC current (50Hz / 60Hz) Auto range	100mA	0.1(mA)	80~1049(mA)	±2%±0.7mA	
1000mA	1(mA)	80~1049(mA)	±2%		
		10A		0.01(A)	0.80~10.49(A)
		30A		0.1(A)	8.0~31.5(A)
Operating system	Earth resistance function: Constant voltage injection, 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.IV 300V Pollution degree2)				
Withstand voltage	AC5320Vrms / 5 seconds Between the Transformer jaws fitted parts and Case enclosure (except for jaws)				
Conductor size	Approx. 32mm max.				
Dimension	246(L) × 120(W) × 54(D)mm				
Weight	Approx. 780g (including batteries)				
Accessories	Battery R6P : 4pcs Instruction manual : 1pc				
	Resistor 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

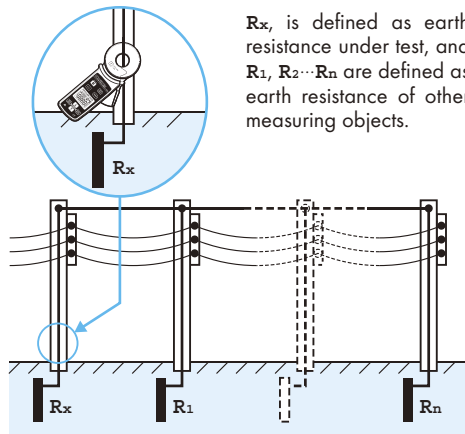
### ● Resistor for operation check



### ● Hard case



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

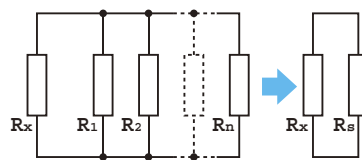


$R_x$ , is defined as earth resistance under test, and  $R_1, R_2, \dots, R_n$  are defined as earth resistance of other measuring objects.

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

And can be regarded as a combined resistance  $R_s$ . The  $R_s$  can be regarded small enough against  $R_x$  since a combined resistance consists of several resistances.

Following is an equivalent circuit diagram of this circuit.



$$R_s = \frac{1}{\sum_{i=1}^n \frac{1}{R_i}}$$

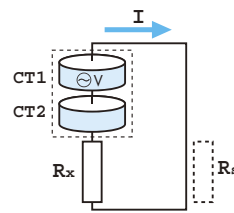
Voltage  $V$  is applied to the object (Resistance  $R_x$ ) measured from the voltage injection transformer CT1, and the current  $I$  corresponding to the earth resistance is flowed.

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

$$\frac{V}{I} = R = R_x + R_s$$

$$R_x \gg R_s = \frac{1}{\sum_{i=1}^n \frac{1}{R_i}}$$

$$\frac{V}{I} = R_x$$



## ! Safety Warnings :

Please read the "Safety Warnings" in the instruction manual supplied with the instrument thoroughly and 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