

The Kyoritsu's range of earth resistance testers have been enjoying worldwide popularity and longtime sales as a high quality and high performance test instrument. Our original constant current circuit to minimize the effect of commercial frequencies and a synchronous rectifying circuit always ensure a stable instrument performance. Advanced functions include self-check of the resistance of auxiliary earth spikes and testing of earth voltage, etc. All of these features ensure trouble free operation in the field.

MODEL 4102A

MODEL 4102A Soft Case Model
 MODEL 4102A-H Hard Case Model



- The latest circuit design permits the instrument to operate with the minimum of influence from earth voltage and earth resistance of auxiliary earth spikes.
- Dust and drip proof. (designed to IEC 529 IP54)
- Earth resistance value can be read directly from the scale.
- Designed to meet IEC61010-1 safety standard.
- Capable of measuring earth voltage.
- Small and lightweight. Shock resistant new case material.
- 2mA measuring current permits earth resistance tests without tripping earth leakage current breakers in the circuit under test.
- Lead wire connection to C and P terminals and proper auxiliary earth resistance can be checked by "OK" lamp. Lead wire connection to C and E terminals is good when "OK" lamp is illuminated.

MODEL 4102A/4102A-H	
Measurement Ranges	Earth Resistance : 0~12Ω / 0~120Ω / 0~1200Ω Earth Voltage[50,60Hz] : 0~30V AC
Accuracy	Earth Resistance: ±3% of full scale Earth Voltage: ±3% of full scale
Overload Protection	Earth Resistance : 276V AC for 10 seconds across 2 of the 3 terminals Earth Voltage : 276V AC for 1 minute
Applicable Standard	IEC61010-1 CAT. III 300V Pollution Degree 2 IEC61557 IEC60529 IP54
Withstand Voltage	3700V AC for 1 minute
Power Source	R6P(AA)(1.5V) × 6
Dimensions	105(L) × 158(W) × 70(D)mm
Weight	600g approx.
Accessories	7095(Test Leads) × 1set(red-20m, yellow-10m, green-5m) 8032(Auxiliary earth spikes) × 1set 7127(Simplified measurement probe) × 1set R6P(AA) × 6, Neck strap, Instruction Manual Carrying Case : 4102A(Soft Case) : 4102A-H(Hard Case)
Optional	7100(Precision Measurement Cord Set)



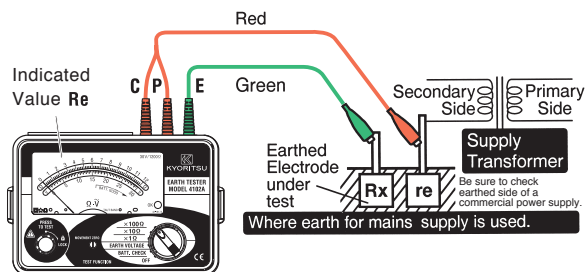
MODEL 4102A Soft Case Model



MODEL 4102A-H Hard Case Model

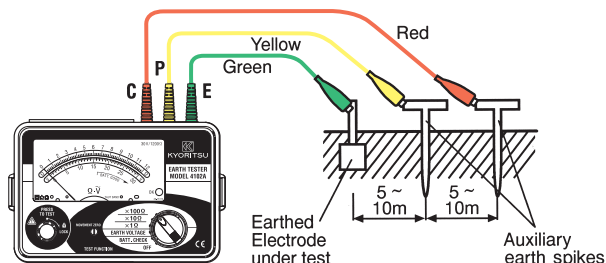
Simplified Measurement Method Using Earthed Side of Commercial Power Supply

Press a desired range switch button first and then "SIMPLIFIED MEAS." button.



Earth Resistance Measurement

Press a desired range switch button first and then "MEAS." button.



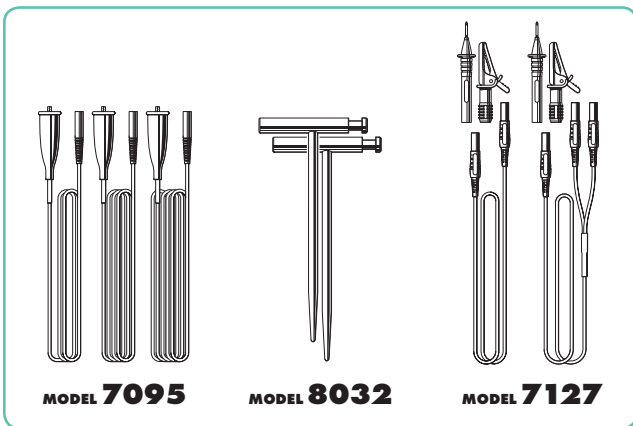
MODEL 4105A

MODEL 4105A Soft Case Model
 MODEL 4105A-H Hard Case Model



- Dust and drip proof.(designed to IEC 529 IP54)
- In addition to the facility for precision measurement, test leads for simplified two wire measuring system also supplied as standard accessories. (unit can be hung from the neck for simplified measurement)
- Designed to meet IEC61010-1 safety standard.
- Capable of measuring earth voltage.
- Automatic warning when resistance of auxiliary earth spikes is in excess of tolerance.
- Small and lightweight. Shock resistant new case material.
- 2mA measuring current permits earth resistance tests without tripping earth leakage current breakers in the circuit under test.

Accessories



MODEL 4105A/4105A-H	
Measurement	Earth Resistance : 0~20Ω /0~200Ω /0~2000Ω
Ranges	Earth Voltage(50,60Hz) : 0~200V AC
Accuracy	Earth Resistance : ±2%rdg±0.1(20Ωrange) ±2%rdg±3dgt(200/2000Ωrange) Earth Voltage : ±1%rdg±4dgt
Overload Protection	Earth Resistance : 280V AC for 10 seconds across 2 of the 3 terminals Earth Voltage : 300V AC for 1 minute
Applicable Standard	IEC61010-1 CAT.Ⅲ 300V Pollution Degree 2 IEC61557 IEC60529 IP54
Withstand Voltage	3700V AC for 1 minute
Power Source	R6P(AA)(1.5V) × 6
Dimensions	105(L) × 158(W) × 70(D)mm
Weight	550g approx.
Accessories	7095(Test Leads) × 1set(red-20m, yellow-10m, green-5m) 8032(Auxiliary earth spikes) × 1set 7127(Simplified measurement probe) × 1set R6P(AA) × 6, Neck strap, Instruction Manual Carrying Case : 4105A(Soft Case) : 4105A-H(Hard Case)
Optional	7100(Precision Measurement Cord Set)

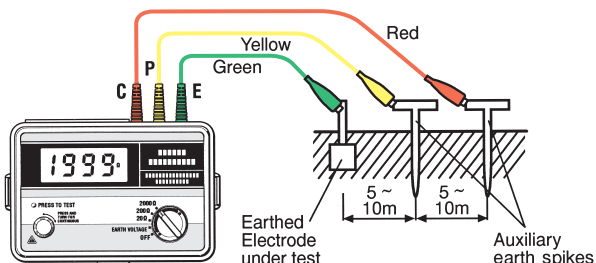


MODEL 4105A Soft Case Model

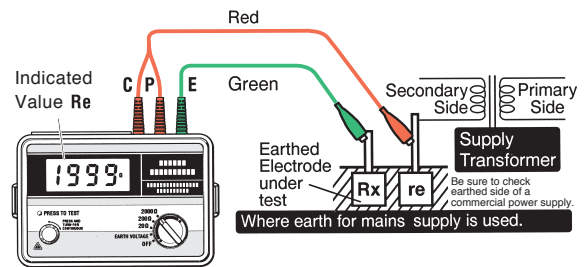


MODEL 4105A-H Hard Case Model

Precision Earth Resistance Measurement



Simplified Earth Resistance Measurement



MODEL 4200 EARTH CLAMP TESTER

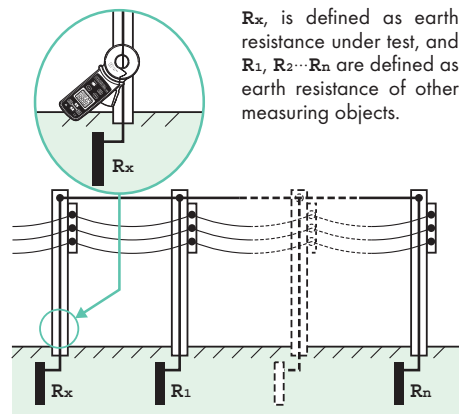


MODEL 4200				
Function	Range	Resolution	Measuring range	Accuracy
Earth resistance Auto range	20Ω	0.01(Ω) ※	0.00~20.99(Ω)	±1.5%±0.05Ω
	200Ω	0.1(Ω)	16.0~99.9(Ω)	±2%±0.5Ω
			100.0~209.9(Ω)	±3%±2Ω
1200Ω	1(Ω)	160~399(Ω)	±5%±5Ω	
		400~599(Ω)	±10%±10Ω	
		600~1260(Ω)	—	
AC current [50Hz / 60Hz] Auto range	100mA	0.1(mA)	0.0~104.9(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) × 4 or LR6(sizeAA alkaline battery) × 4			
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. φ32mm			
Dimension	246(L) × 120(W) × 54(D)mm			
Weight	Approx. 780g (including batteries)			
Accessories	Battery R6P × 4 Instruction manual 8304(Resistor for operation check) 9128(Hard case)			

★Crest factor ≤ 3 (50Hz / 60Hz, peak value shall not exceed 60A) ※4 counts or less are corrected to 0.

- 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

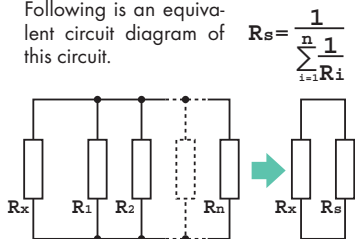
Why earth measurements can be found by only clamping it?



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

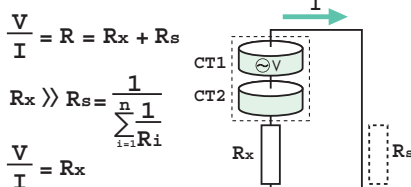
And They can be regarded as a combined resistance R_s . The R_s can be regarded small enough against R_x since a combined resistance consists of several resistances.

Following is an equivalent circuit diagram of this circuit.

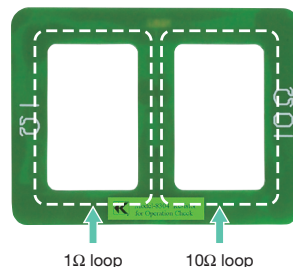


Voltage V is applied to the object (Resistance R_x) measured from the voltage injection transformer CT1, and the current I corresponding to the earth resistance is flowed.

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 diagram)



Accessories



1Ω loop 10Ω loop



MODEL 8304

Resistor for operation check



MODEL 9128

Hard Case