

# HIOKI



## CLAMP ON EARTH TESTER FT6380

Field Measuring Instruments



**Easy pole earth resistance measurement  
with super slim jaw**



**Easy Open Jaw  
Light Weight**



**High Accuracy**

**0.02  $\Omega$  to 1600  $\Omega$  wide measurement range for earth resistance measurement  
1.00 mA to 60.0 A covering small leakage current to load current**

For multi grounded systems only



ISO 9001  
JMI-0216



ISO 14001  
JQA-E-90091



[www.hioki.com](http://www.hioki.com)

HIOKI company overview, new products, environmental considerations and other information are available on our website.



**True RMS**

**CAT IV 600 V**

# Get Things Done with Super Slim Jaws

## Easy clamping!

Open jaws easily with just two fingers. Only half the grip power is needed compared to typical clamp earth testers.



## Clamp at the narrowest point!

Now you can easily clamp the earth cable on the pole without digging. The dramatically slim 0.79 inch (20mm) jaws let you finish your job easily and efficiently.



0.87 inch  
(22 mm)



0.79 inch  
(20 mm)

1.5 inch  
(38 mm)  
0.87 inch  
(22 mm)

## LCD with beautiful back light

With the bright back light, you can easily read the measurement value even in dark locations.



## Quick Start!

No wait time after powering on. Start measuring instantly without zero-calibration.

## High Accuracy and Repeatability

Well-designed magnetic shields eliminate the leakage flux between the two cores that often affect measurement accuracy.

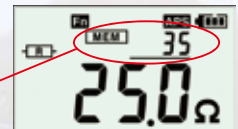
## Alarm Function

Set the alarm to audibly and visually notify yourself that the resistance or current value exceeds the threshold.

## Large storage capacity (up to 2,000 data)

You can store up to 2,000 measurement values in the field and recall them in your office later.

## Memory number



## Filter function enables even more accurate measurements

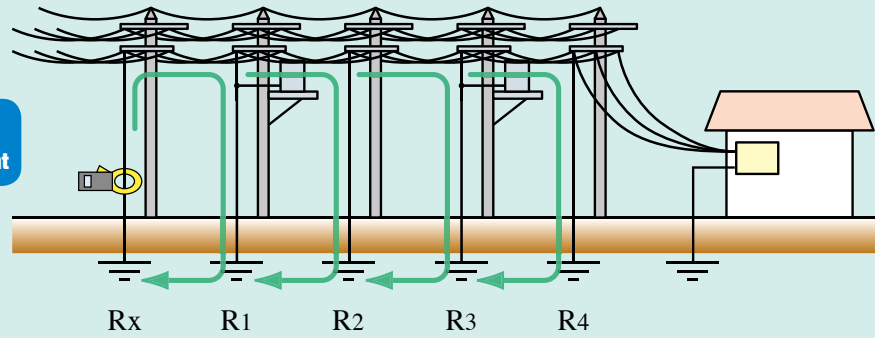
Resistant mode filter: digital filter gives you steadier readings.

Current mode filter: Low-pass filter eliminates harmonics current over 180Hz.

# Measurement Principle

FT6380 can measure Multi-Grounded systems.

Voltage Injection  
Current Measurement



**Clamp on the earth cable. The instrument has two cores for voltage injection and current measurement.**

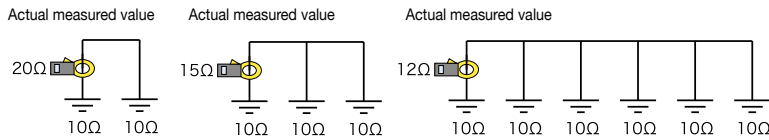
1. The voltage transducer injects a defined voltage into the multi-grounded system.
2. From the defined voltage and measured current, the total circuit loop resistance is calculated in the following equation.

In a typical multi-grounded system, the parallel resistance value is small enough to be ignored and the equation as referred on the left can be simulated as follows.

$$R_x + \frac{1}{\frac{1}{R_1} + \frac{1}{R_2} + \frac{1}{R_3} + \frac{1}{R_4} \dots} = \frac{V}{I}$$

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

## Measurement Examples



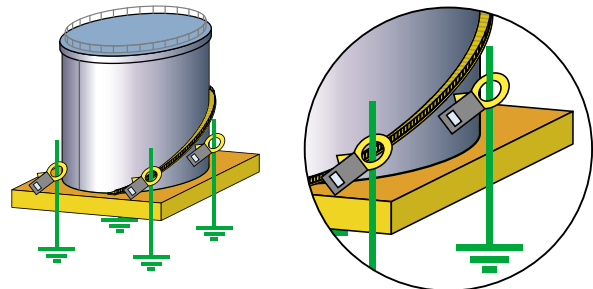
In multi-grounded system, the larger the number of grounding poles, the more accurate the measured value. Where the number of grounding poles are few, if just only one carries a very small resistance (e.g., 1Ω), the measured value will be close to the true value. On the other hand, poles with large resistances (e.g., 100Ω) will result in greater measurement uncertainties.

\* The illustration may differ slightly from the field application.

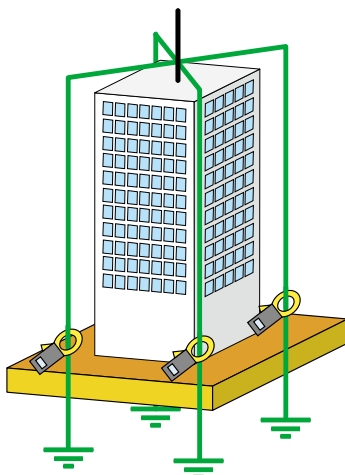


## Applications

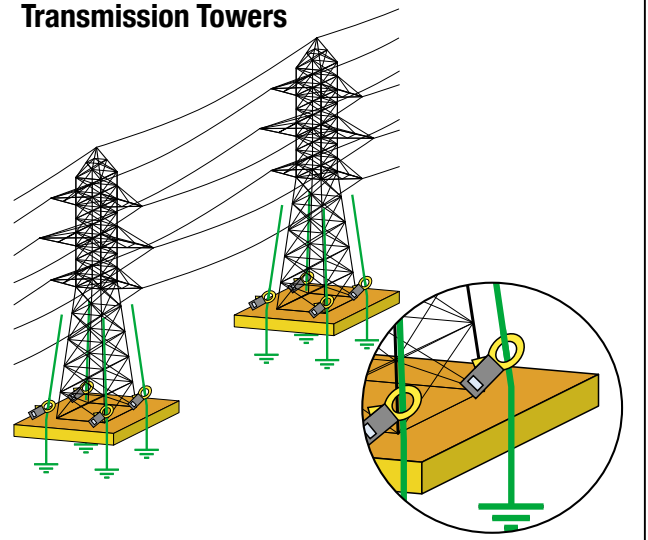
### Hazardous Storage Tanks



### Building lightning protection



### Transmission Towers



## Specifications

Current measurement specifications

|  |  |                                  |
|--|--|----------------------------------|
| Display                                    | Digital/ LCD, max. 2000 digits   | Display update rate: 2 times / s |
| Range switching                            | Auto-range   |                                  |
| Maximum conductor diameter for measurement | ø 32 mm (1.26 in)  |                                  |
| Power supply                               | LR6 alkaline battery × 2<br>Continuous operating time: Approx. 35 hours With display backlight off |                                  |
| Auto power save                            | Power save state when 5 minutes have elapsed since the last operation                              |                                  |
| Operating temperature and humidity         | -10°C (14°F) to 50°C (122°F), 80 % rh or less (non-condensation)                                   |                                  |
| Storage temperature and humidity           | -20°C (-4°F) to 60°C (140°F), 80 % rh or less (non-condensation, except for the battery)           |                                  |
| Dustproof and waterproof                   | IP40 (EN60529) With Jaws Closed  |                                  |
| Maximum rated voltage to earth             | 600 VAC measurement category IV (anticipated transient overvoltage 8000 V)                         |                                  |
| Dielectric strength                        | Between the Case and the Clamp core 7400 Vrms 1 minute   |                                  |
| Maximum input current                      | 100 A AC continuous, 200 A AC for 2 minutes (50/60 Hz)   |                                  |
| Conductor position effects                 | Within ±0.5% rdg. (using the center of the sensor as the reference, in all positions)              |                                  |
| Magnetic field interference                | 10 mA or less in an external magnetic field of 400 A/m at 50/60 Hz AC                              |                                  |
| Applicable standards                       | Safety: EN61010 EMC: EN61326   |                                  |
| Dimensions, Mass                           | Approx. 73 mm (2.87 in) W × 218 mm (8.58 in) H × 43 mm (1.69 in) D, Approx 620 g (21.9 oz)         |                                  |
| Accessories                                | Carrying Case×1, Resistance Check Loop×1, Strap×1, Instruction Manual×1, Alkaline Battery(LR6)×2   |                                  |

## Resistance mode

Accuracy guaranteed for 1 year, Temperature and humidity  
for guaranteed accuracy: 23±5°C 80%rh or less (no condensation)

| Range   | Measurement Range  | Resolution | Accuracy            |
|---------|--------------------|------------|---------------------|
| 0.20 Ω  | 0.02 Ω to 0.20 Ω   | 0.01 Ω     | ±1.5 % rdg. ±0.02 Ω |
| 2.00 Ω  | 0.18 Ω to 2.00 Ω   | 0.01 Ω     | ±1.5 % rdg. ±0.02 Ω |
| 20.00 Ω | 1.80 Ω to 20.00 Ω  | 0.01 Ω     | ±1.5 % rdg. ±0.05 Ω |
| 50.0 Ω  | 18.0 Ω to 50.0 Ω   | 0.1 Ω      | ±1.5 % rdg. ±0.1 Ω  |
| 100.0 Ω | 50.0 Ω to 100.0 Ω  | 0.1 Ω      | ±1.5 % rdg. ±0.5 Ω  |
| 200.0 Ω | 100.0 Ω to 200.0 Ω | 0.2 Ω      | ±3.0 % rdg. ±1.0 Ω  |
| 400 Ω   | 180 Ω to 400 Ω     | 1 Ω        | ±5 % rdg. ±5 Ω      |
| 600 Ω   | 400 Ω to 600 Ω     | 2 Ω        | ±10 % rdg. ±10 Ω    |
| 1200 Ω  | 600 Ω to 1200 Ω    | 10 Ω       | ±20 % rdg.          |
| 1600 Ω  | 1200 Ω to 1600 Ω   | 20 Ω       | ±35 % rdg.          |

Frequency of measurement Approx. 2,400Hz.

## Alarm function

|                               |   |
|-------------------------------|---|
| Alarm Hi/Lo                   | Separate Hi/Lo settings for resistance measurement and current measurement                                |
|                               | Resistance measurement: Hi.AL/Lo.AL<br>Current measurement: Hi.AL/Lo.AL                                   |
| Alarm threshold setting range | Resistance measurement: 0.02 Ω to 1,600 Ω   |
|                               | Resistance measurement initial value: 25.0 Ω  |
|                               | Current measurement: 0.05 mA to 200.0 mA, 0.201 A to 60.0 A<br>Current measurement initial value: 1.00 mA |

## Current Mode

Accuracy guaranteed for 1 year  
Temperature and humidity for guaranteed accuracy: 23±5°C 80%rh or less (no condensation)

| Range    | Measurement Range   | Resolution | Frequency Range               | Accuracy             |                      |
|----------|---------------------|------------|-------------------------------|----------------------|----------------------|
|          |                     |            |                               | Filter off           | Filter on            |
| 20.00 mA | 1.00 mA to 20.00 mA | 0.01 mA    | 45 ≤ f ≤ 66Hz                 | ±2.0 % rdg. ±0.05 mA | ±2.0 % rdg. ±0.05 mA |
|          |                     |            | 30 ≤ f < 45Hz, 66 < f ≤ 400Hz | ±2.5 % rdg. ±0.05 mA | —                    |
| 200.0 mA | 18.0 mA to 200.0 mA | 0.1 mA     | 45 ≤ f ≤ 66Hz                 | ±2.0 % rdg. ±0.5 mA  | ±2.0 % rdg. ±0.5 mA  |
|          |                     |            | 30 ≤ f < 45Hz, 66 < f ≤ 400Hz | ±2.5 % rdg. ±0.5 mA  | —                    |
| 2.000 A  | 0.180 A to 2.000 A  | 0.001 A    | 45 ≤ f ≤ 66Hz                 | ±2.0 % rdg. ±0.005 A | ±2.0 % rdg. ±0.005 A |
|          |                     |            | 30 ≤ f < 45Hz, 66 < f ≤ 400Hz | ±2.5 % rdg. ±0.005 A | —                    |
| 20.00 A  | 1.80 A to 20.00 A   | 0.01 A     | 45 ≤ f ≤ 66Hz                 | ±2.0 % rdg. ±0.05 A  | ±2.0 % rdg. ±0.05 A  |
|          |                     |            | 30 ≤ f < 45Hz, 66 < f ≤ 400Hz | ±2.5 % rdg. ±0.05 A  | —                    |
| 60.0 A   | 18.0 A to 60.0 A    | 0.1 A      | 45 ≤ f ≤ 66Hz                 | ±2.0 % rdg. ±0.5 A   | ±2.0 % rdg. ±0.5 A   |
|          |                     |            | 30 ≤ f < 45Hz, 66 < f ≤ 400Hz | ±2.5 % rdg. ±0.5 A   | —                    |

## Accessories

Carrying Case



Resistance Check Loop



Note: Company names and Product names appearing in this catalog are trademarks or registered trademarks of various companies.

**HIOKI**  
HIOKI E. E. CORPORATION

Headquarters :  
81 Koizumi, Ueda, Nagano, 386-1192, Japan  
TEL +81-268-28-0562 FAX +81-268-28-0568  
http://www.hioki.co.jp / E-mail: os-com@hioki.co.jp

HIOKI USA CORPORATION :  
TEL +1-609-409-9109 FAX +1-609-409-9108  
http://www.hiokiusa.com / E-mail: hioki@hiokiusa.com

HIOKI (Shanghai) Sales & Trading Co., Ltd. :  
TEL +86-21-63910090 FAX +86-21-63910360  
http://www.hioki.cn / E-mail: info@hioki.com.cn  
Beijing Office : TEL +86-10-84418761  
FAX +86-10-84418763 / E-mail: info-bj@hioki.com.cn  
Guangzhou Office : TEL +86-20-38392673  
FAX +86-20-38392679 / E-mail: info-gz@hioki.com.cn  
Shenzhen Office : TEL +86-755-83038357  
FAX +86-755-83039160 / E-mail: info-sz@hioki.com.cn  
HIOKI INDIA PRIVATE LIMITED :  
TEL +91-731-6548081 FAX +91-731-4020083  
E-mail: info@hioki.in  
HIOKI SINGAPORE PTE. LTD. :  
TEL +65-6634-7677 FAX +65-6634-7477  
E-mail: info@hioki.com.sg

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