EXTECH® INSTRUMENTS

Precision Milliohm Meters

Models 380460 and 380462

| Range	Resolution
200mΩ	0.1mΩ
2000mΩ	1mΩ
20Ω	10mΩ
200Ω	0.1Ω
2000Ω	1Ω
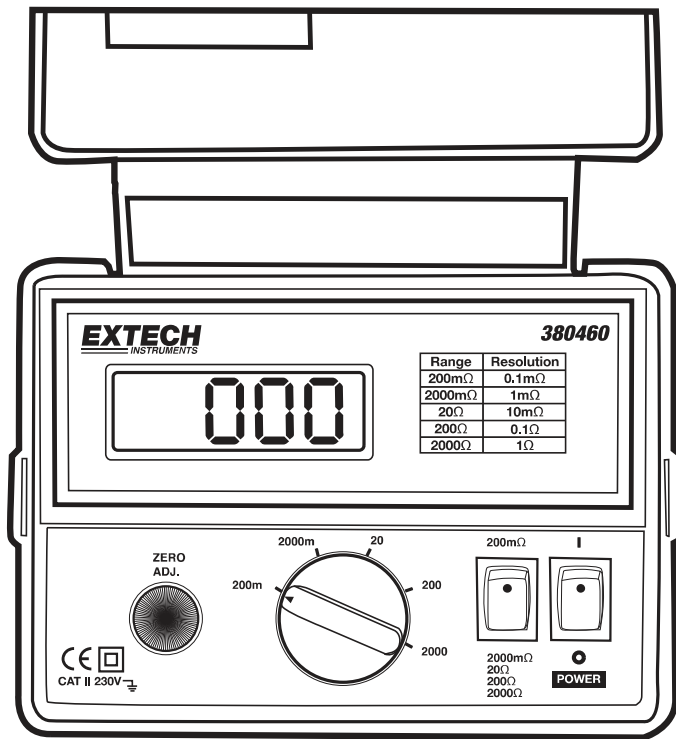
Introduction

Congratulations on your purchase of the Extech Milliohm Meter Model 380460 (110V) or Model 380462 (220V). The milliohm meters are enclosed in rugged carrying cases for durability. Measurements are made with Kelvin test leads (supplied) for optimal accuracy in five (5) selectable ranges. Careful use of this meter will provide years of reliable service.

Meter Description

1. LCD Display
2. Zero adjust knob
3. Range Dial
4. Power switch
5. 200mΩ select switch
6. AC power cord
7. Kelvin lead to meter connections
8. Carrying case
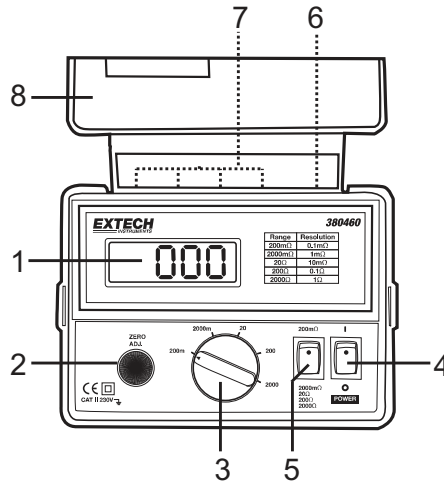
Operation

Basic Principles of 4-wire Measurements

For each range, the meter provides a specific amount of test current (refer to General Specifications) which flows from the HI to the LO meter terminal and therefore from the HI to the LO clip lead (Refer to the diagram). This is the current that ultimately passes through the device under test (RX in diagram below).

Once the test current is applied to the device under test, clip leads Rx1 & Rx2 measure the voltage drop across the device under test. The following equations detail how the meter accomplishes its measurement tasks.
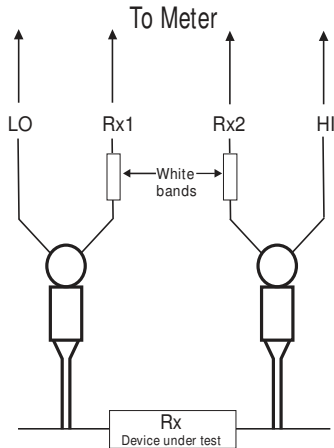
Measurement Equations

$V_x = I_s \times R_x$;

Where **V_x** is the voltage (measured by the meter) across the device under test; **I_s** is the test current; **R_x** is the resistance of the device under test. From **$V_x = I_s \times R_x$**, the meter moves to the next step which is: **$R_x = V_x / I_s$**. With this equation the meter determines the resistance of the device under test. Note that the measured resistance (Rx1 & Rx2) is not affected by stray resistance since the test current is supplied directly to the device under test. This is the advantage of the 4-wire Kelvin lead configuration over 2-wire methods which introduce errors into low resistance measurements.

International Symbols

--- - -	DC Voltage DC Current	⚠	Refer to explanation in owners manual
∿	AC Voltage AC Current	⚡	Dangerous voltage risk of electrical shock
⏚	Ground	▣	Double Insulation

Powering the Meter

Connect the meter to the correct power source (110 or 220VAC); the Model 380460 uses 110VAC and the Model 380462 uses 220VAC (note that these meters are NOT interchangeable). Do not apply voltage to the meter input measurement terminals. Meter damage may result.

Measurement Procedure

1. Rotate the Range select switch to the desired range.
2. When using the 200m range, put the 200m select switch to the 200m position; for all other measurement ranges put this switch in the opposite position
3. Perform a Zero Adjustment per the following:
   - Short the Kelvin Clips as shown in the diagram below.

     (Make sure that the clips are clean)
   - Rotate the Zero Adjust Knob until the meter indicates zero units.
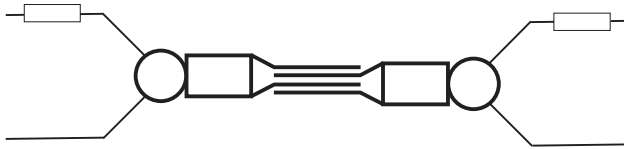
4. Either attach the test leads onto a component or attach the leads between two points on a circuit.
5. Observe the meter reading.

Specifications

General Specifications

Circuit	Custom one-chip LSI microprocessor circuit
Display	18 mm (0.7") LCD with 2000 display counts
Measurement terminals	4-Terminal Kelvin type
Measurement ranges	Five (5) ranges (200m, 2, 20, 200, 2000Ω ohms)
Zero Adjust	±50 count adjustment
Sampling Time	Approximately 0.4 seconds
Over range indication	Indication of "1 "
Operating Temperature	0 °C to 50 °C (32 °F to 122 °F)
Operating Humidity	80% Relative Humidity max.
Power Supply	110V (380460) or 220V (380462) ±15%, 50/60Hz
Power Consumption	Less than 2 VA
Weight	694g (1.53 lbs.)
Dimensions	167 x 122 x 85 mm (6.6 x 4.8 x 3.4") with cover
Accessories	Power Cable and 4-wire Kelvin clip leads(380465)

Range Specifications

Range	Resolution	Test Current	Accuracy	Open Circuit Voltage
200 mΩ	0.1mΩ	100mA	± 0.75% + 4 digits	4.4V
2 Ω	1mΩ	10mA	± 0.75% + 2 digits	3.6V
20 Ω	10mΩ	10mA	± 0.75% + 2 digits	3.6V
200 Ω	0.1 Ω	1mA	± 0.75% + 2 digits	3.5V
2000 Ω	1 Ω	1mA	± 0.75% + 2 digits	3.5V

Note: Specifications tested using RF Field Strength <3V/m and frequency <30MHz