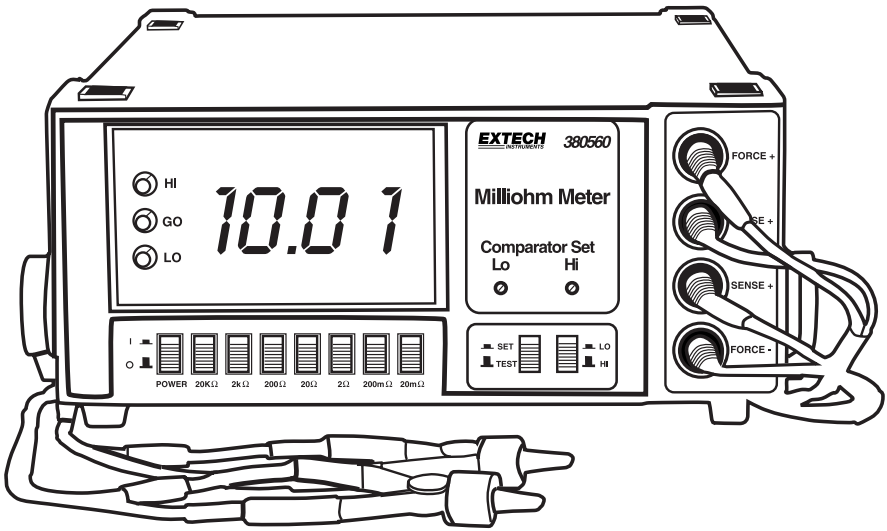
User's Guide

EXTECH INSTRUMENTS

High Resolution Benchtop MilliOhm Meter

Models 380560 and 380562



Introduction

Congratulations on your purchase of the Extech 380560 (117V) or 380562 (220V) High Resolution MilliOhm Meter. This device offers seven resistance ranges with resolution as low as 0.01mΩ. The 4-wire Kelvin clip connection ensures optimum accuracy. The built-in comparator feature offers HI-LO-GO testing. Typical applications include transformer, motor coil, and PC Board resistance measurements. Careful use of this meter will provide years of reliable service.

Specifications

General Specifications

Circuit	Custom one-chip LSI microprocessor circuit
Display	0.7" (18 mm) 2000 Count LED Display
Connection type	4-Terminal Kelvin
Measurement ranges	Seven ranges (see listing below)
Test voltage	5V DC
Comparator	Built-in HI/LO/GO testing with audible beeper
Zero adjust	Automatic (no adjustment necessary)
Over-range indication	Display reads "1____" when the reading is out of range
Operating Temperature	32°F to 122°F (0°C to 50°C)
Operating Humidity	Max. 80% RH
Power Supply	110V (380560) or 220V (380562) ±15%, 50/60Hz
Weight	4.85 lbs (2.2kg)
Dimensions	11 x 8 x 3.5" (280 x 210 x 90mm)

Range Specifications

Range	Resolution	Test Current	Accuracy (%rdg)	Test Voltage
20 mΩ	0.01mΩ	1A	± (0.2% + 6 digits)	2.7V DC
200 mΩ	0.1mΩ	1A	± (0.2% + 4 digits)	3.3V DC
2 Ω	.001Ω	0.1A		3.5V DC
20 Ω	.01Ω	10mA		4.1V DC
200 Ω	0.1 Ω	1mA		4.5V DC
2K Ω	.001kΩ	0.1mA		
20K Ω	.01kΩ	10uA		

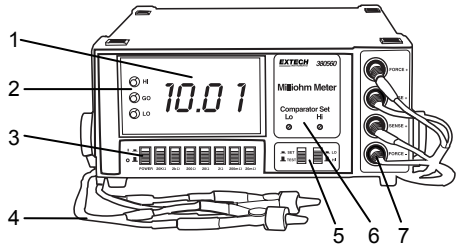
Note: Specifications based on RF Field Strength <3V/m and frequency <30MHz

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

Meter Description

1. LED Display
2. HI/LO/GO Status Indicators
3. Power and Range pushbuttons
4. Kelvin clip leads
5. SET/TEST and HI/LO pushbuttons
6. Comparator adjustment screws
7. Kelvin clip lead input terminals



Note: The power cable input and audible alert button are on the rear of the instrument.

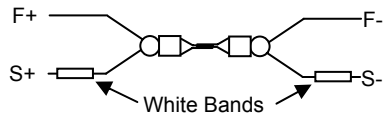
Measurement Precautions

Ensure that the meter is connected to the correct power source (110V for model 380560 or 220V for model 380562).

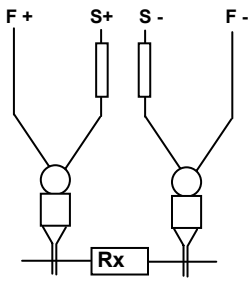
Do not apply voltage to the meter input terminals. Meter damage may result.

Measurement Procedure

1. Connect the Kelvin test leads to the meter.
2. Press the **POWER** pushbutton to turn power on.
3. Position the **SET/TEST** pushbutton to the **TEST** position.
4. To check the meter zero, clip the test leads together as shown at right.



5. Select the desired measuring range using the labeled black pushbuttons. When the resistance of the device is unknown, start with the highest range and work downward.
6. Clip the leads onto the device under test as shown below.
7. Observe the reading on the LED display.



Comparator Operation (HI-LO-GO)

The meter is equipped with a Comparator function allowing the user to sort resistance measurements against programmable HIGH and LOW limits. To program the comparator:

1. Position the **SET/TEST** pushbutton to SET.
2. Position the **LO/HI** pushbutton to LO.
3. Adjust the **LO** comparator screw to the desired low limit (shown on the LED display).
4. Position the **LO/HI** pushbutton to HI.
5. Adjust the **HI** comparator screw to the desired high limit.
6. Position the **SET/TEST** pushbutton to TEST.
7. Set the rear buzzer switch ON or OFF. When ON, the meter will sound an audible tone for each GO measurement.

Each time a measurement is taken, the appropriate Comparator status LED will light. If the measurement is lower than the LO setting, the LO LED will light. If the measurement is higher than the HI setting, the HI LED will light. If the reading is between the HI and LO settings, the green GO LED will light. If the rear beeper pushbutton is set ON, an audible tone will sound each time a GO reading is detected.

Measurement Principles

The test current flows through the resistance from the **FORCE+ (F+)** terminal to the **FORCE- (F-)** terminal. The **S+** and **S-** (**SENSE**) terminals measure the voltage drop across the device under test only, thus eliminating the lead and contact resistances. The meter displays the resistance based on the test current and the measured voltage; refer to the equation below:

Rx = Vx / Is

Where:
Vx is the voltage drop across the device under test;
Is is the test current;
Rx is the resistance of the device under test.