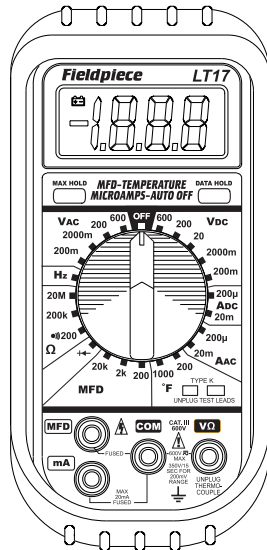


DIGITAL MULTIMETER Model LT17



OPERATOR'S MANUAL

General Description

The LT17 measures temperature (ambient air as well as pipes), capacitance (motor start and motor run capacitors), microamps (flame rectifier diode circuit), and frequency (variable frequency motor controls). In addition it measures volts (AC&DC), resistance and has a continuity beeper and diode check. The LT17 works with all Fieldpiece accessories, when connected with our deluxe test leads (ADL2).

⚠ WARNINGS

DO NOT APPLY VOLTAGE TO THE CAPACITANCE JACK OR THE CURRENT JACK. Even low voltages can cause a current overload and blow a fuse. Replace blown fuse to regain function.

Disconnect the thermocouple when measuring voltage.

DISCONNECT TEST LEADS WHEN MEASURING TEMPERATURE.

General Specifications

Auto-off: turns meter off after approx. 50 minutes to extend battery life.

Indicators: Continuity beeper (<100W). Low battery. Overrange: "OL" is displayed.

Environmental: Operating temperature 32°F to 122°F, storage 0°F to 140°F with batteries removed, RH<70%.

Measurement rate: 2.5 times/sec nominal.

Battery life: >200 hours typical with carbon zinc.

Battery type: 9V NEDA 1604 type

Functional Specifications

Accuracy specifications @ 74°F±8°F, relative humidity less than 70%. Accuracy specified as ±% of reading ± number of least significant digits.

DC Voltage

Ranges: 200mV, 2000mV, 20V, 200V, 600V.

Resolution: 100µV

Accuracy: ±(0.5%rdg + 1dgts)

Input impedance: 10M ω

AC Voltage (50Hz-500Hz)

Ranges: 200mV, 2000mV, 200V, 600V.

Resolution: 100µV

Accuracy: 200mV, 200mV range ±(1.2% + 4)

200V, 600V range ±(2% rdg + 4dgts)

Input impedance: 10M ω

Capacitance

Ranges: 200mF, 2K μ mF, 20K μ mF

Accuracy: ±(4% rdg + 10 dgts)

Test Voltage: <3.5V

Test Frequency: 21Hz

AC Current

Ranges: 200µA, 20mA

Resolution: 100nA

Accuracy: ±(1.5% rdg + 1dgts)

Voltage burden: 250mV for 200µA range. 400mV for 20mA range.

DC Current:

Ranges: 200µA, 20mA

Resolution: 100nA

Accuracy: ±(1.0% rdg + 1 dgts)

Voltage burden: 250mV for 200µA range. 400mV for 20mA range.

Resistance (Ohms)

Ranges: 200 ω , 200K ω , 20M ω

Resolution: 0.1 ω

Accuracy: 200 ω , 200K ω ranges

±(1.0% rdg + 4 dgts)

20M ω range ±(2.0% rdg + 4 dgts)

Open circuit voltage: 0.3V (3V on 200 ω)

Continuity

Audible indication: less than 100W

Response time: 100ms

For Your Safety...

Inspect the test leads for damage to the insulation or exposed metal. Replace if suspect. Never ground yourself when taking electrical measurements. Do not touch exposed metal pipes, outlets, fixtures, etc., which might be at ground potential. Keep your body isolated from ground by using dry clothing, rubber shoes, rubber mats, or any approved insulating material. When disconnecting from a circuit, disconnect the "RED" lead first, then the common lead. Work with others. Use one hand for testing. Turn off power to the circuit under test before cutting, unsoldering, or breaking the circuit. Keep your fingers behind the finger guards on the probes.

All voltage ranges will withstand up to 600VDC or 600VAC. Do not exceed 600VAC/DC.

Disconnect the meter from the circuit before turning any inductor off, including motors, transformers, and solenoids. High voltage transients can damage the meter beyond repair. Do not use during electrical storms.

Frequency (auto ranging)

Range: 10Hz to 40KHz

Sensitivity: 3.5VRMS min.

Accuracy: ±(0.1% rdg + 3 dgts)

Diode test

Resolution: 1mV

Accuracy: ±(1.5% rdg + 1 dgt)


Test current: 1.0mA ± 0.6mA

Open circuit voltage: 3.0V typical

Overload Protection

$V_{AC} + V_{DC}$	200mV range	500VDC / 350VAC for 15 sec
	>200mV range	600VDC / 600VAC
$A_{AC} + A_{DC}$	mA input mA input	0.5A / 500V (6.35mmx32mm) model RFM74
Capacitance		0.1A / 250V (5mmx20mm) model RF16
Ohms (ω)		500VDC / 500VAC
Diode		500VDC / 500VAC
Continuity		500VDC / 500VAC
Temperature		30 VAC, 60 VDC

Battery Replacement

The multimeter displays "  " to indicate that the battery needs a replacement to maintain proper operation.

Limited Warranty

This meter is warranted against defects in material or workmanship for one year from date of purchase. Fieldpiece will replace or repair the defective unit, at its option, subject to verification of the defect.

This warranty does not apply to defects resulting from abuse, neglect, accident, unauthorized repair, alteration, or unreasonable use of the instrument.

ANY IMPLIED WARRANTIES ARISING OUT OF THE SALE OF A FIELDPIECE INSTRUMENT'S PRODUCT, INCLUDING BUT NOT LIMITED TO IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE, ARE LIMITED TO THE ABOVE. FIELDPIECE SHALL NOT BE LIABLE FOR LOSS OF USE OF THE INSTRUMENT OR OTHER INCIDENTAL OR CONSEQUENTIAL DAMAGES, EXPENSES, OR ECONOMIC LOSS, OR FOR ANY CLAIM FOR SUCH DAMAGE, EXPENSES, OR ECONOMIC LOSS.

State laws vary. The above limitations or exclusions may not apply to you. This warranty gives you specific legal rights, and you may also have other rights which vary from state to state.

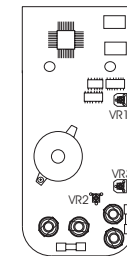
Temperature (K-type T/C)

Range: -30°F to 1000°F **Resolution:** 0.1°F

Accuracy: ±(1°F), 32°F to 120°F;

±(1%+1.5°F), -4°F to 750°F; ±(2%+3°F), -30°F to -4°F & 750°F to 1000°F. ±(1°C),

0°C to 120°C; ±(1%+1°C), 0°F to 400°F; ±(2%+3°C), -35°C to -0°C & 400°C to 600°C.



Ice bucket calibration

For accuracies of ± 1°F (32°F to 120°F) calibrate the LT17 to a known temperature. A glass of stabilized ice water is very close to 32°F and is

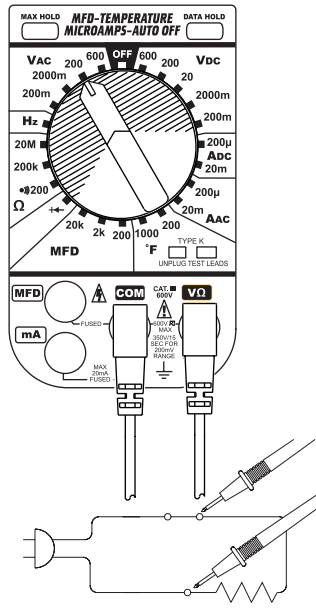
usually very convenient.

1. Remove back of the meter. Hold the battery in place with a rubber band.
2. Stabilize a large cup of ice water.
3. Select the °F range on the LT17.
4. Immerse the probe and let it stabilize.
5. Adjust VR2 until the read out is within 2°F of the specified 32°F. Then adjust VR3 until the meter reads within 0.1°F of 32°F.

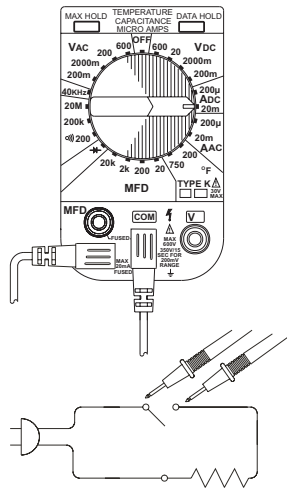
Display °C or °F

1. Locate the pins above/right of VR3.
2. Short (jumper) pins to display °C.

How To Use Your Multimeter

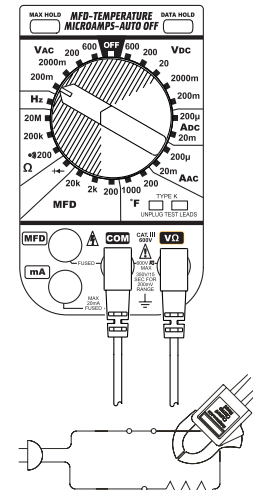


Voltage

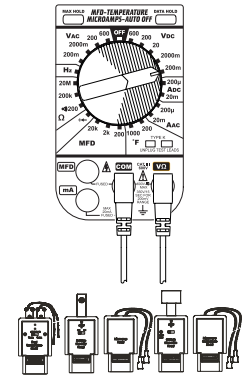


Current Through the Meter

There are two ways to measure current using the LT17. To safely measure high currents, use the Fieldpiece ACH, or any other current clamp which converts amps to millivolts). To measure microamps or milliamps, use the "com" jack and the jack on the lower left labeled "mA". Do not attempt to measure currents over 20mA.



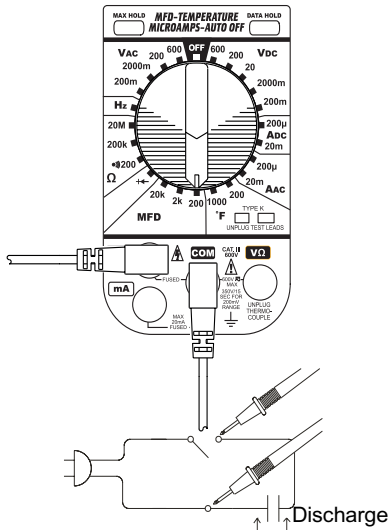
AC Current with ACH



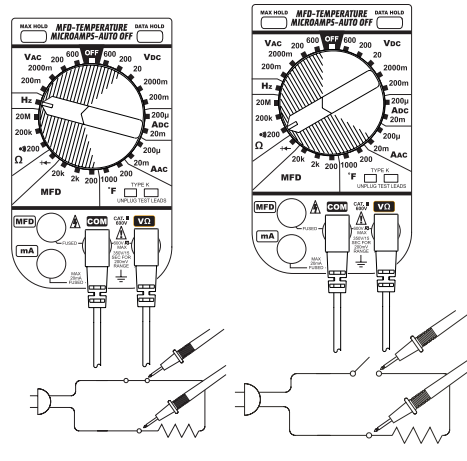
Optional Accessory Heads

Fieldpiece accessory heads convert a parameter into a millivolt signal. For example, the ATH3 converts one °F into one millivolt DC. Set the multimeter to read millivolts DC. Any digital multimeter with a mVDC range and industry standard jacks can be used with Fieldpiece accessories. The only exception is the ACH current clamp which requires the meter to be set to read AC millivolts.

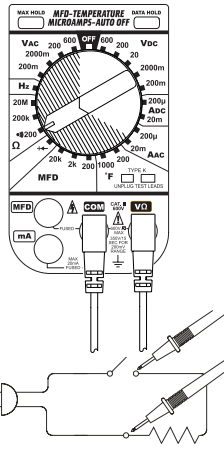
Use Fieldpiece deluxe test leads (model ADL2) or the Fieldpiece handle/adaptor (model AHDL1) to connect any head to a DMM.



Capacitance



Frequency

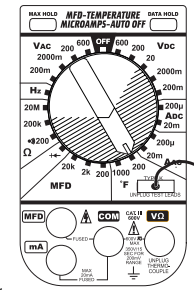


Resistance

Selecting Ranges

For all ranges and functions choose a range just above the value you expect. If display reads "OL" (overload), select a higher range. If display shows less than three numbers, select a lower range for better resolution.

Select AC or DC volts and amps ranges as appropriate.



Remove test leads

Temperature

Insure the temperature being measured is stable. Maintain good contact between the thermocouple and what's being measured. Set the meter on the 200°F or 1000°F settings for 0.1°F or 1°F resolution respectively. DO NOT CONNECT to voltage over 30VDC or 42V P-P.

⚠ WARNINGS

REMOVE THE THERMOCOUPLE WHEN TAKING VOLTAGE MEASUREMENTS.

DISCONNECT THE TEST LEADS WHEN TAKING TEMPERATURE MEASUREMENTS.

Obtaining service

Send the meter freight prepaid to Fieldpiece Instruments. For warranty service also send proof of date and location of purchase. For out-of-warranty service send \$40, check or money order. The meter will be repaired or replaced, at the option of Fieldpiece, and returned to you via least cost transportation.

User Maintenance

All repairs must be performed by a factory service center.



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