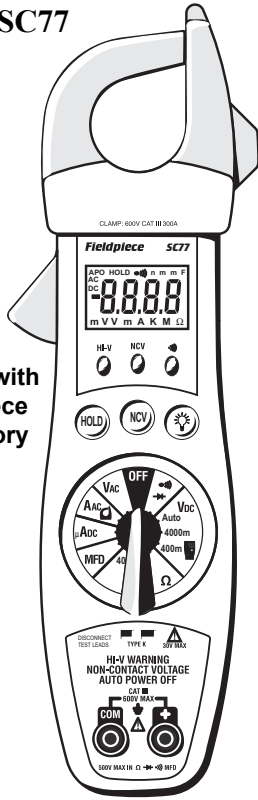


# AUTO RANGING DIGITAL CLAMP METER Model SC77



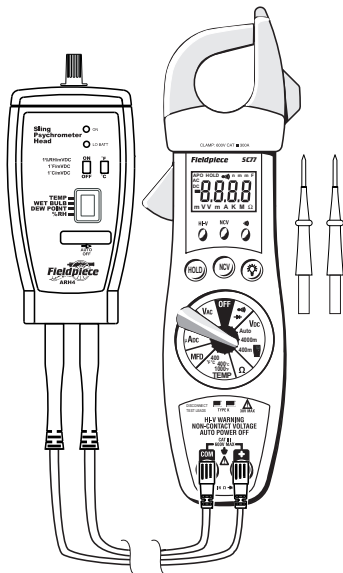
Works with Fieldpiece accessory heads!



## OPERATOR'S MANUAL

### Works with Fieldpiece accessory heads

Connect your Fieldpiece accessory head to SC series meter through included deluxe silicone leads. Use 400mVDC or 4000mVDC range for most heads.



SC77 connected to ARH4 through leads.

**⚠ WARNINGS ⚠**

DISCONNECT AND UNPLUG TEST LEADS before opening case.

TEST NCV FUNCTION ON KNOWN LIVE WIRE before using.

DO NOT APPLY VOLTAGE greater than 30VAC or 60VDC to the thermocouple or the jacks when the rotary dial is on °F.

REMOVE THE THERMOCOUPLE when taking voltage measurements.

DISCONNECT THE TEST LEADS when taking temperature measurements.

DO NOT APPLY VOLTAGE TO THE JACKS when the rotary dial is on microamps. Even low voltages can cause a current overload and blow the fuse. Replace blown fuse to regain function.

### Maintenance

Clean the exterior with clean dry cloth. Do not use liquid.

**Battery replacement:** When the multimeter displays "batt" the battery must be replaced. Disconnect and unplug leads, turn meter off, and remove the battery cover. Replace the battery with a NEDA type 1604 9V battery.

### Symbols used:

- Caution, risk of electric shock
- Caution, refer to manual.
- Ground
- Double insulation

### Available Fieldpiece accessory heads

There is a Fieldpiece accessory head available for just about any job. There are heads to measure temperature, superheat, subcooling, RH%, wet bulb, dew point, vacuum (microns of mercury), manometer (inches of water column), amps AC&DC, high voltage, CO, CO<sub>2</sub>, air velocity, and many more.

### Non-contact voltage

With the NCV tab on the tip of the clamp close to an AC voltage, press the NCV button. The NCV LED will light and the beeper will beep. The NCV function is sensitive enough to detect 24VAC on thermostats.

### Hi voltage indicator

In any VAC/VDC range, when you touch a voltage greater than 30V, the beeper will beep and the red Hi-V LED will blink. BE CAREFUL!

### Current measurements

The fixed jaw is longer than the moveable jaw to make it easier to select just one wire from a bundle. With the jaws closed, separate one wire using the long fixed jaw. Slide it to the corner where the two jaws meet. Then open the jaws to let it in. You can select the wire without having to hold the jaws open.

### Microamps

For measuring the flame diode current in a heater control.

### For your safety...

**General:** Disconnect the test leads before opening the case. 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. Do not measure resistance when circuit is powered. Do not apply more than rated voltage between input and ground.

**All voltage tests:** For model SC77 all voltage ranges will withstand up to 600VDC or 600VAC rms. Do not apply more than 600VDC or 600VAC rms.

**AC tests:** 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.

### Capacitance

For motor-start and motor-run capacitors. Disconnect the capacitor from power first. Short the terminals to discharge the capacitors. Disconnect any resistors that might be between the terminals of the capacitor. The SC77 displays a "dsc" symbol when capacitor needs discharging.

### Temperature

Plug any K-type thermocouple directly into the meter to measure temperature. Temperature measurement will maintain good accuracy in fast changing environments. One thermocouple is included. No adapter is required.

### Field Temp. calibration

For accuracies of  $\pm 1^\circ$  calibrate the SC76 to a known temperature. A glass of stabilized ice water is very close to 32°F (0°C) and is usually very convenient.

1. Select the °F range on the SC76.
2. Remove back case. Hold the battery in place with a rubber band.
3. Stabilize a large cup of ice water.
4. Immerse the probe and let it stabilize.
5. Adjust VR3 (lower right corner of PCB) to get close to 32°F (0°C) then adjust VR4 (below VR3) to get within 0.1°F/C of 32°F (0°C).
6. To calibrate in °C, close the jumper that is to the left of VR3.

### 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 from the sale of a Fieldpiece 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 of such damage, expenses, or economic loss.

State laws vary. The above limitations or exclusions may not apply to you.

### Obtaining service

Return any defective SC77 to Fieldpiece for service. For warranty service, please provide a proof of purchase. Contact Fieldpiece for out of warranty repair charges. Contact information can be found at our website [www.fieldpiece.com](http://www.fieldpiece.com).

### Display °C or °F

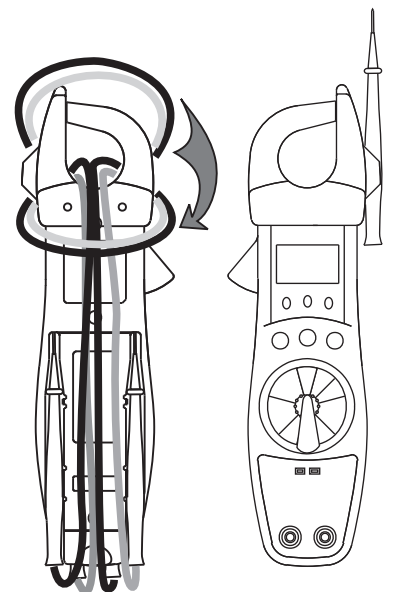
Remove back of meter, locate jumper on lower right corner of PCB (just below VR3) and close jumper to read temperature in °C.

### Using & storing test leads

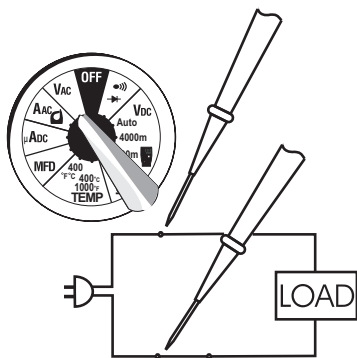
Because the wire insulation is silicone they will stay flexible in cold weather and will not melt if bumped by a soldering iron.

Use the single test probe holder on clamp to make voltage testing easy.

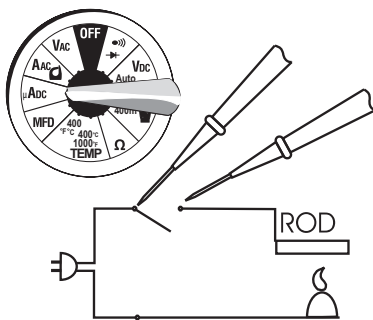
For convenient lead storage, wrap the leads as shown.



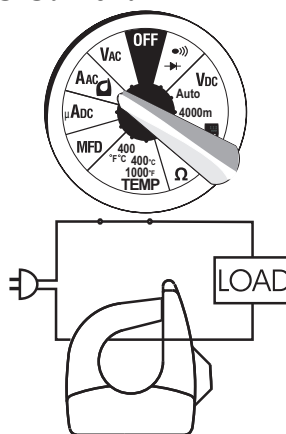
## Voltage



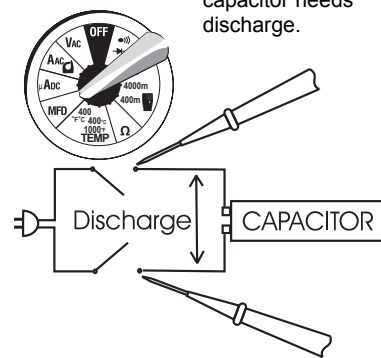
## DC Current <4000µADC



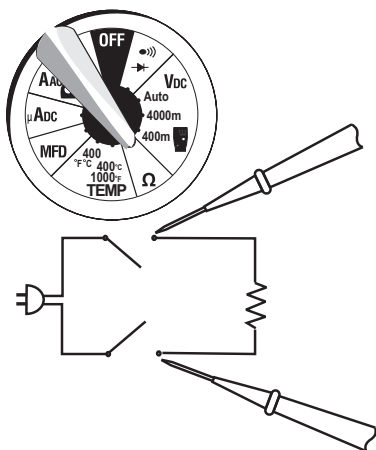
## AC Current



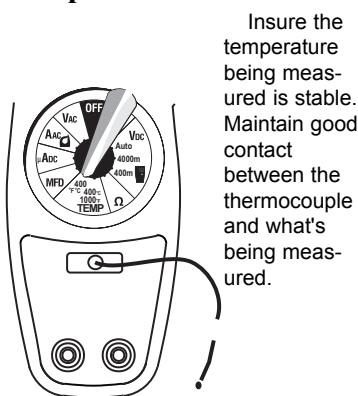
## Capacitance



## Resistance



## Temperature



Insure the temperature being measured is stable. Maintain good contact between the thermocouple and what's being measured.

**Disconnect test leads from voltage before plugging thermocouple in.**

## Selecting ranges

For DC voltage, set the meter to the VDC parameter instead of VAC as shown above.

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.

## CE

This instrument complies with the requirements of the following European Community Directives: 89/336/EEC (Electromagnetic Compatibility) and 73/23/EEC (Low Voltage) as amended by 93/68/EEC (CE Marking).

## SPECIFICATIONS

**Display:** LCD with a maximum reading of 4000.

**Data Hold:** Operating on all ranges  
**Range(RNG):** Operating on all autoranges

**Overrange:** "OL" mark indication.

**Auto power off:** Approx. 10 minutes.

**Measurement rate:** 2 times per second, nominal.

**Operating environment:** 32 to 122°F (0 to 50°C) at <70% R.H.

**Storage temperature:** -4 to 140°F (-20 to 60°C), 0 to 80% R.H. with battery removed.

**Accuracy:** Specifications good in ambient conditions of 73°F ±9°F (23°C ±5°), <75% relative humidity.

**Temperature Coefficient:** 0.1 × (specified accuracy) per °F/°C; 32 to 66°F (0 to 19°C); 82 to 122°F (28 to 50°C).

**Altitude:** 6561.7 Feet (2000 meters).  
**Jaw opening capability:** 38mm conductor.

**Power:** Single standard 9-volt battery, NEDA 1604, JIS 006P, IEC 6F22.

**Battery life:** 100 hours carbon zinc 200 hours typical with alkaline.

**Accessories:** One pair test leads, one pair of small alligator clips, k-type thermocouple, 9V battery (installed), and operating instructions.

**Safety:** Designed to meet IEC/EN61010-1 and IEC/EN61010-2-032, CATIII 600V, class II and pollution degree 2, indoor use comply with CE. C-Tick.

### DC volts

**Ranges:** 400mV, 4000mV, 40V, 400V, 600V

**Resolution:** 0.1mV

**Accuracy:** ±(0.5% rdg + 2 dgt)

**Input impedance:** 3MΩ on V inputs, 10MΩ on mV input

**Overload protection:** 600VDC or AC rms

**Transient protection:** 6kV for 10µ sec

### AC volts(50Hz - 500Hz)

**Ranges:** 4V, 40V, 400V, 600V

**Resolution:** 1mV

**Accuracy:** ±(2.0% rdg + 8 dgts) 50 ~ 500Hz

**Input impedance:** 3MΩ

**Overload protection:** 600V DC or AC rms

**Transient protection:** 6kV for 10µ sec

### AC current(50Hz - 60Hz)

**Ranges:** 40A, 300A

**Resolution:** 0.01A

**DC Accuracy:**

±(3.0% rdg + 10 dgts) 0 ~ 300A / 50 ~ 60Hz

**Overload protection:** 300AAC

### DC current

**Ranges:** 400µA

**Resolution:** 0.1µA

**Accuracy:** ±(1.0% rdg + 2 dgt)

**Voltage burden:** 1V

**Overload protection:** 500V DC or AC rms

### Resistance

**Ranges:** 400Ω, 4kΩ, 40kΩ, 400kΩ, 4MΩ, 40MΩ

**Resolution:** 0.1Ω

**Accuracy:**

±(1.2% rdg + 4 dgts) on 400Ω to 400kΩ ranges

±(1.5% rdg + 4 dgts) on 4MΩ range

±(3.0% rdg + 5 dgts) on 40MΩ range

**Open circuit volts:** -0.45VDC typical, (-1.2VDC on 400Ω range)

**Overload protection:** 500VDC or AC rms

### Temperature

**Range:** -30 to 1000°F (-35 to 600°C)

**Resolution:** 0.1°

**Accuracy:** ±1°F (32 to 120°F)

±1% + 1.5°F (-4 to 750°F)

±2% + 4°F (-30 to -4°F, 750 to 1000°F)

±1°C (0 to 120°C),

±1% + 1°C (0 to 400°C)

±2% + 3°C (-35 to 0°C, 400 to 600°C)

**Sensor type:** K-type thermocouple

**Overload protection:** 60 VDC or 30 VAC rms

### Continuity

**Range:** 400Ω

**Resolution:** 1Ω

**Audible indication:** Less than 25Ω

**Response time:** 500ms

**Overload Protection:** 500VDC or AC rms

**Green LED will be on continuously.**

### Capacitance

**Range:** 4µF, 40µF, 400µF, 4mF

1mF = 1000µF

i.e: 1.425mF = 1425µF

**Resolution:** 1nF

**Accuracy:** ±(3% rdg + 10 dgts) on 4µF range

±(3% rdg + 5 dgts) on 40µF to

400µF ranges

±(5% rdg + 20 dgts) on 4mF range

**Input protection:** 500VDC or AC rms

### Hi-V(voltage) warning

>30VAC/DC meter beeps, red LED blinks.

### Non-contact voltage

Senses voltage 24V to 600V AC (50Hz to 60Hz) beeper chirps and big bright red LED comes on, works when meter dial is on any range.

