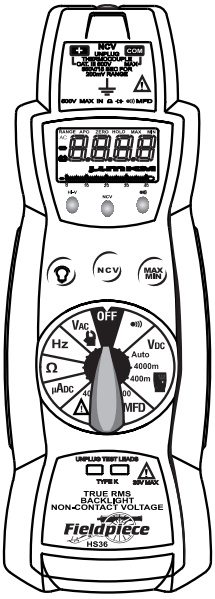
GENERAFRIO

AUTO-RANGING DIGITAL STICK METERS:
HS35
HS36



Function Legend

◦)))	Continuity
VDC	Volts DC
MFD	Capacitance
°C/°F	Temperature
µADC	Microamps DC
Ω	Resistance
Hz	Frequency
VAC	Volts AC

Fieldpiece

OPERATOR'S MANUAL

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: All voltage ranges will withstand up to 600V. Do not apply more than 600VDC or 600VAC.

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.

Maintenance

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

Battery replacement: When the multimeter displays "[+ -]" 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.

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.

Service

Return any defective HS35/36 to Fieldpiece for warranty service along with proof of purchase. Contact Fieldpiece for out of warranty repair charges.

Fieldpiece
Designed in USA
MADE IN TAIWAN

www.fieldpiece.com

Non-contact voltage

With the red NCV tab on the tip of the meter close to an AC voltage, press and hold the NCV button. The NCV LED will light and the beeper will beep. The closer you get to AC voltage, the louder the 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!

Microamps

For measuring the flame diode current in a heater control.

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.

MIN/MAX

Press MIN/MAX once to begin recording MIN and MAX. Press MIN/MAX to select current reading's MIN or MAX. Hold down for 2 seconds to exit MIN/MAX function.

Temperature

Plug any K-type thermocouple directly into the meter to measure temperature. Temperature measurement will be accurate even in fast changing environments because of excellent temperature compensation. One thermocouple is included. No adapter is required.

Backlight (HS36)

Press the ☼ button to activate the backlight for approximately 60 seconds.

True RMS (HS36)

Digital multimeters use two different types of AC sensing. The most common is average sensing, normalized to a true RMS value of a sine wave. The other is true RMS sensing. The actual true RMS value is sensed for a wave form within the limits of the crest factor. Either sensing method will give the same results on a clean sine wave but they may differ on a non-sinusoidal waveform.

Field °F calibration

For accuracies of ±1°F, calibrate to a known temperature. A glass of stabilized ice water is very close to 32°F (0°C) and is usually very convenient but any known temperature can be used.

1. Select the 400°F range.
2. Remove back case and hold the battery in place with a rubber band so terminals are touching.
3. Stabilize a large cup of ice water.
4. Immerse the thermocouple probe and let it stabilize.
5. Adjust VR3 (lower right corner of PCB) to get close to 32°F (0°C) then adjust VR2 (left of VR3) to get within 0.1°F (0.05°C) of 32°F (0°C).
6. To calibrate in °C, close the jumper that is to the left of VR3.

Disable auto off

Set to OFF position, press and hold RNG (HS35) or MIN/MAX (HS36) button while turning rotary dial to desired range position. Release the button when LCD displays normally. Note: "APO" annunciator will be missing from the display. The Auto Power Off mode is on when "APO" indicated on the display.

Attach to Fieldpiece accessory head

Connect your Fieldpiece accessory head directly to the top of HS series and switch to range indicated by head. Visit www.fieldpiece.com for more info.

Symbols used:

⚠ Caution, risk of electric shock

⚠ Caution, refer to manual.

⏚ Ground

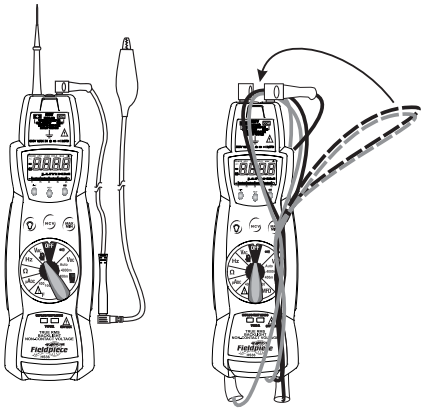
⧈ Double insulation

Using & storing test leads

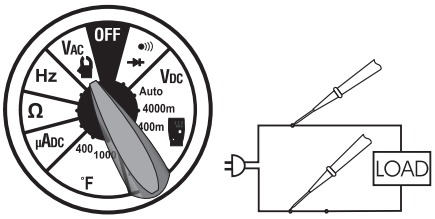
Because the wire insulation is silicone the leads will stay flexible in cold weather and will not melt if bumped by a soldering iron.

Disconnect top half of test lead and plug tip directly into meter to make voltage testing easy. Use with included alligator clip (ASA2) as shown for even easier operation.

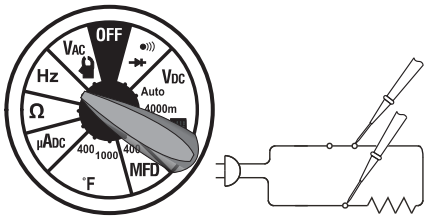
For convenient lead storage, wrap the leads as shown. Pull leads around front between overhanging tips, twist, and pull over one of the lead plugs.



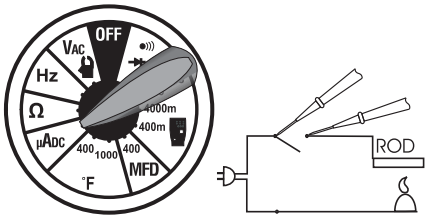
Voltage



Frequency



DC Current < 4000µADC

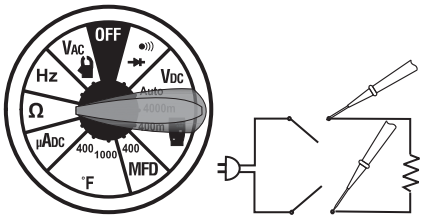


Selecting Ranges

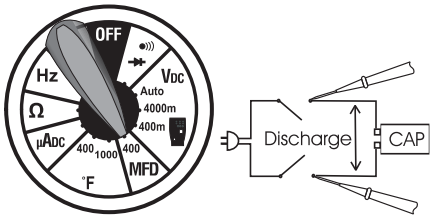
For DC voltage, set the meter to the VDC parameter instead of VAC as shown above.

For all ranges 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.

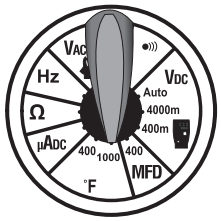
Resistance



Capacitance

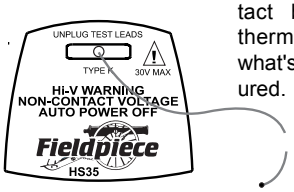


Temperature

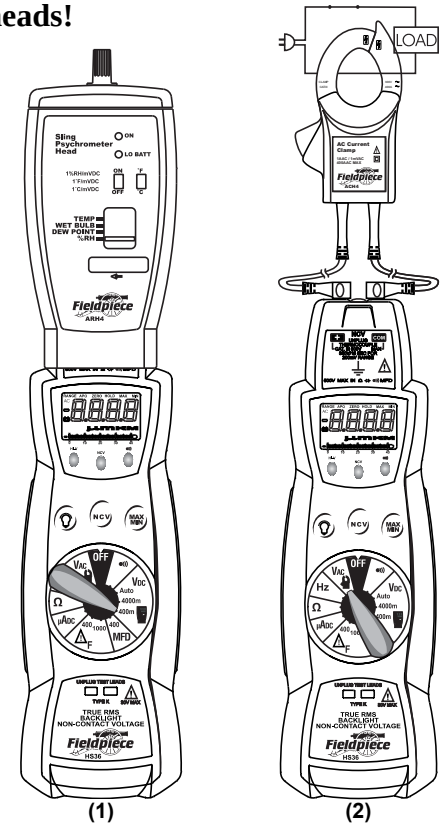


Disconnect test leads from voltage before plugging in thermocouple!

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



Works with Fieldpiece accessory heads!



(1) (2)

Connect to Fieldpiece accessory heads by simply attaching them to the top of meter **(1)** or attach remotely through leads **(2)**. For most heads, move dial to range shown **(1)**. For the AAC clamp (ACH4), move dial to VAC range **(2)**.

SPECIFICATIONS

Display: 3¾ digit liquid crystal display (LCD) with a maximum reading of 3999.
Analog bar graph: 41 segments with measurements 20 times per second.
Range (RNG): Manual ranging mode (HS35)
Overrange: "OL" mark indication.
Auto power off: 30 minutes.
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°C), <75% relative humidity.
Temperature coefficient: 0.1×(specified accuracy) per °F/°C. (32 to 64°F (0 to 18°C), 82 to 122°F(28 to 50°C)).
Power: Single standard 9-volt battery, NEDA 1604, JIS 006P, IEC 6F22.
Battery life: 300 hours typical with alkaline.
Accessories: One pair test leads, one pair alligator clips, k-type thermocouple, 9V battery (installed), and operating instructions.
Safety: UL,CE,Cat III600V,UL61010-1,IEC/EN61010-1.

Temperature

Range: -30 to 1000°F (-34 to 538°C)
Resolution: 0.1°F/°C
Accuracy: ±1°F, 32 to 120°F (0 to 49°C),
±1% + 1.5°F, -4 to 750°F (-20 to 399°C),
±2% + 4°F, -30 to -4°F (-34 to -20°C),
±2% + 4°F, 750 to 1000°F (399 to 538°C)
Sensor type: K-type thermocouple
Overload protection: 60 VDC or 30 VAC rms

Continuity

Audible indication: Less than 40Ω
Response time: 500ms
Green LED will be on continuously.
Overload protection: 500VDC or AC rms

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: 400mV, 4V, 40V, 400V, 600V
Conversion: True RMS (HS36), average (HS35)
Crest factor: Less than or equal to 3 (HS36)
Resolution: 0.1mV
Accuracy:
±(1.2% rdg + 5 dgts) 50Hz ~ 60Hz on 400mV range
±(1.5% rdg + 5 dgts)
±(2% rdg + 5 dgts) on 600V range
Input impedance: 3MΩ
Overload protection: 600V DC or AC rms
Transient protection: 6kV for 10µ sec

DC current

Ranges: 400µA, 4000µA
Resolution: 0.1µA
Accuracy: ±(1.0% rdg + 2 dgt)
Voltage burden: 1V, (8V on 4000µA range)
Overload protection: 500V DC or AC rms

Resistance

Ranges: 400Ω, 4kΩ, 40kΩ, 400kΩ, 4MΩ, 40MΩ
Resolution: 0.1Ω
Accuracy:
±(1.0% 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

Capacitance

Range: 400µF
Resolution: 0.1µF
Accuracy: ±(3% rdg + 5 dgts)
Overload protection: 500V DC or AC rms

Frequency

Ranges: 4k, 40k, 400k, 4M, 40MHz
Resolution: 1Hz
Accuracy: ±(0.1% rdg + 3 dgts)
Sensitivity: 10Hz ~ 4MHz: > 1Vrms, 4MHz ~ 40MHz: > 2Vrms, <5Vrms
Minimum pulse width: > 25ns
Duty cycle limits: > 30% and < 70%
Overload protection: 500VDC or AC rms

⚠ 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 OF.

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.