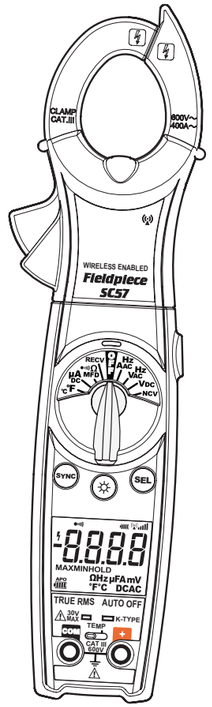
Fieldpiece

Wireless Swivel Clamp Meter

OPERATOR'S MANUAL

Model SC57



Quick Start

Receive a Wireless Reading

1. Select RECV on main dial of SC57.
2. Hold SYNC for one second.
3. Connect Fieldpiece accessory head to ET2W.
3. Turn ET2W to DC switch position.
4. Hold SYNC on ET2W for one second. When connection is made the wireless reading and icons will display on the SC57 screen.

Certifications

c UL us LISTED — UL 61010-1, Second Edition

CE — IEC/EN61010-1, EMC EN61326-1
IEC/EN61010-2-032

FC — FCC ID: VEARF915A

N22675 — C-Tick (N22675)

WEEE

CATIII 600V, class II and pollution degree 2 indoor use comply with CE, RoHS compliant.

Description

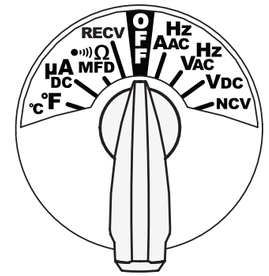
As a proud owner of the first wireless Fieldpiece clamp meter, SC57, you are well on your way to eliminating tangled wires. SC57 will give you the power to receive measurements wirelessly from anywhere on the jobsite. For instance, you can transmit indoor wet bulb measurements for target superheat over the air while you work at the condenser.

Your SC57 can receive measurements wirelessly from any Fieldpiece accessory head connected to a Fieldpiece wireless transmitter like an ET2W or EH4W. Your SC57 comes with one ET2W wireless transmitter.

In addition, your SC57 can transmit wirelessly any measurement range on the dial to Fieldpiece wireless receivers; like EH4W, HG3, LT17AW, or another SC57.

SC57 is a swivel clamp meter designed for the HVAC/R technician. The swivel on the SC57 allows you to see the amperage reading, regardless of wire orientation. The jaw light and backlight ☼ make it easier to use in any lighting condition. True RMS helps you take more accurate voltage readings on variable speed drives.

Controls



Rotate dial to the function you want to use.

SYNC — Hold for 1 second to connect with other Fieldpiece wireless products

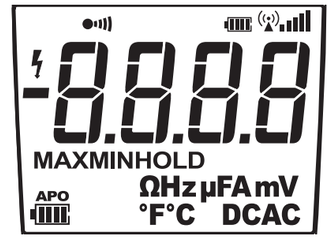
SEL — Cycle through parameters or ranges within a dial position

☼ — Press to illuminate backlight for 3 min

HOLD MAX MIN — Press to freeze current, maximum or minimum reading

Display

	Wireless Icon
	Signal Strength Bars and Search Pattern indicator when sending a wireless measurement
	Battery Life Indicator
APO	Auto Power Off Enabled
	High Voltage Warning (+30V)
HOLD	Data Hold Mode
MAX	Maximum Reading
MIN	Minimum Reading
	Continuity Test
Hz	Frequency Test (hertz)
Ω	Resistance Test (ohms)
F	Capacitance Test (farads)
µ	Micro Unit (10^{-6}, one millionth)
m	Milli Unit (10^{-3}, one thousandth)



Specifications

Wireless range: Up to 75 feet (23m) line of sight
Minimum wireless distance: 1 foot (30cm)
Wireless frequency: 910MHz to 920MHz (US), 868.1MHz to 868.5MHz (European)
Display: 10000 count display with backlight
Overrange: (OL) or (-OL) is displayed
Measurement rate: 2 times per second, nominal
Zero: Automatic
Operating environment: 32°F to 122°F (0°C to 50°C) at <70% relative humidity
Storage temperature: -4°F to 140°F (-20°C to 60°C), 0 to 80% RH (with battery removed)
Accuracy: Stated accuracy @ 73°F±9°F (23°C±5°C), <75%RH
Temperature coefficient: 0.1 x (specified accuracy) per °C [0°C to 18°C (32°F to 64°F), 28°C to 50° C(82°F to 122°F)]
Accuracy Specification: Calculate against a known value
APO (Auto Power Off): Approx. 30 minutes
Power: Single standard 9-volt battery, NEDA 1604, JIS 006P, IEC 6F22
Battery life: 100 hours typical alkaline
Low battery indication: Battery icon will be empty ( ). "batt" displays along with a continuous beep when the battery voltage drops below the operating level. Meter shuts off in 5 seconds.
Dimensions: 258.3mm(H) x 71.2mm(W) x 42.7mm(D)
Weight: Approx. 278g including battery
Altitude: 6562 feet (2000m)
Overload protection: 600VDC or 600VAC rms unless otherwise stated in the individual test sections.
Test leads: Use UL listed test leads that comply to UL61010-031 rated CATIII 600V or above. Included test leads are gold-plated and have removeable safety caps.

Functions

Wireless Receiver Mode

Use your SC57 to wirelessly receive a live measurement you have set up at a diffeent location on the jobsite. Like receiving an indoor wet bulb temp. when your at the condensor.

Receiving Wireless Measurements

1. Select RECV switch position on SC57. Hold SYNC button until meter beeps (>1 sec). Search pattern initiates.
2. Connect and turn on any Fieldpiece accessory head to the ET2W wireless transmitter.
3. Select DC switch position on ET2W for all accessory heads except ACH4 (AC switch position).
4. Hold SYNC button on ET2W for one second.
5. The wireless measurement, signal strength, and battery life of the ET2W will display in the top-right corner of the SC57 screen.

Note: If the ET2W is not connected within 2 min, the SC57 will beep and stop searching.

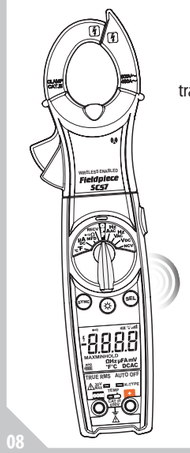
Wireless Transmitter Mode

Transmit electrical measurements wirelessly from SC57 to Fieldpiece wireless receivers like EH4W, LT17AW, HG3 or another SC57. Leave the

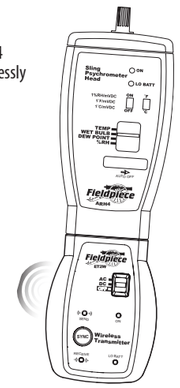
SC57 behind a closed fan door and send the amp reading to the wireless receiver in your hand.

Sending Wireless Measurements

1. Select any switch position other than RECV.
2. Hold SYNC until meter beeps (>1 sec). Search pattern will initiate.
3. Select RECV switch position on the Fieldpiece wireless receiver. Hold SYNC button for one second.
4. The measurement from the SC57 will be displayed on the Fieldpiece wireless receiver.



ET2W w/ ARH4 transmitting wirelessly to SC57



Wireless Auto-Connection

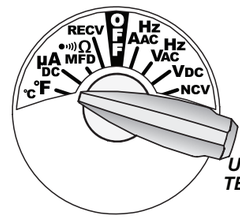
When powered on, SC57 will search and connect to the last connected single-link wireless partner device.

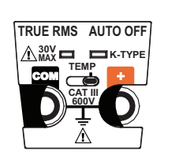
Please operate the instrument following all instructions of the operator's manual to avoid impairing the safety of the product.

Temperature (°F/°C)

Plug any K-type thermocouple directly into the meter to measure temperature. Cold junction is located inside the meter and allows for extremely accurate measurements even in rapidly changing ambient temperatures (going from rooftop to freezer). No adapter is required. See Temp Calibration section for calibration instructions.

Range: -40°F to 2200°F, (-40°C to 1200°C) **Resolution:** 0.1°
Accuracy: ±(1°F) 32°F to 120°F, ±(1°C) 0°C to 49°C
±(1%+2°F) 120°F to 750°F, ±(1%+1°C) 49°C to 400°C
±(2%+6°F) -40°F to 32°F, ±(2%+3°C) -40°C to 0°C
±(2%+6°F) 750°F to 2200°F, ±(2%+3°C) 400°C to 1200°C
Sensor type: K-type thermocouple
Overload protection: 30 VDC or 30VAC rms



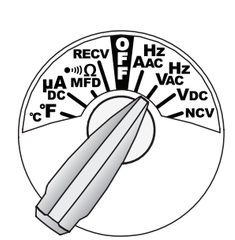


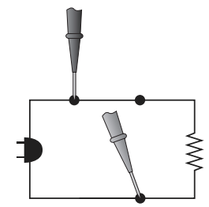
Unplug Leads and Slide TEMP Switch to the Right

Voltage AC (VAC) (50Hz-400Hz)

Test power lines (120, 220, 480), test 24V going to controls, and test for transformer failure.

Ranges: 0 to 600V **Resolution:** 0.1V
Accuracy: ±(1.0% + 5 dgts) 50-100Hz
±(6%+5 dgts) 100-400Hz
True RMS: Yes **Crest factor:** ≤ 3
Input impedance: 1MΩ

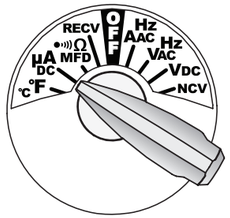


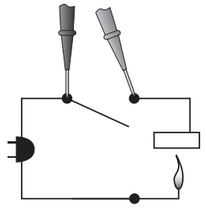


MicroAmps DC (µADC)

Microamps for flame rectifier diode test on a heater control. Connect leads between flame sensor probe and control module and turn heating unit on to read µA measurement. When the flame is on, there should be a measurable µADC signal, typically under 10µADC. Compare measurement to manufacture's specification to determine if replacement is necessary.

Ranges: 1000µA **Resolution:** 0.1µA
Accuracy: ±(1.0% + 5 dgts) **Voltage burden:** 1V
Overload Protection: 600VDC or 600VAC rms

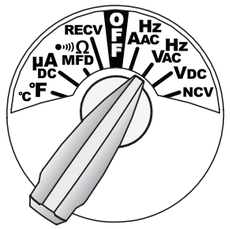


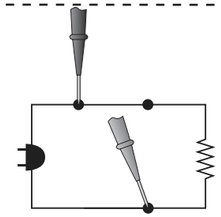


Frequency (Hz) Through Leads

Check variable frequency drives. Check incoming voltages to ensure they are cycling at 60Hz or desired frequency. Select VAC/Hz and press SEL button.

Ranges: 20 to 400Hz **Resolution:** 0.1Hz
Accuracy: ±(0.5% + 5 dgts)
Sensitivity: 5V rms on VAC range.

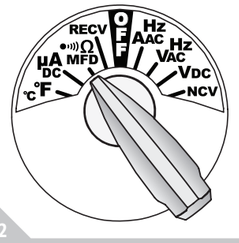


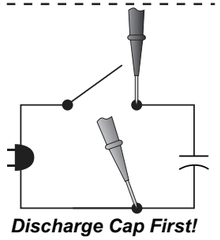


Capacitance (MFD)

Capacitors are one of the most failure prone components in a HVAC/R system. Set to MFD/Ω/•)) to test motor start and run capacitors. Discharge the capacitor and disconnect from power and resistors between terminals before testing.

Ranges: 0 to 1000µF **Resolution:** 0.1µF
Accuracy: ± (5% + 15 dgts)
Overload Protection: 600VDC or 600VAC rms



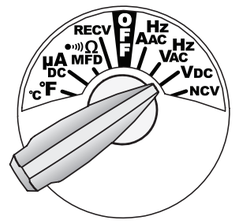


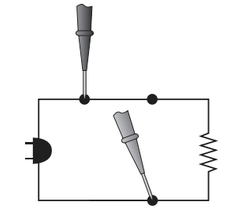
Discharge Cap First!

Voltage DC (VDC)

Select VDC to measure DC voltage.

Ranges: 0 to 600V
Accuracy: ±(1.0% + 5 dgts) on 600V range
Resolution: 0.1V **Input impedance:** 1MΩ





Resistance (Ω)

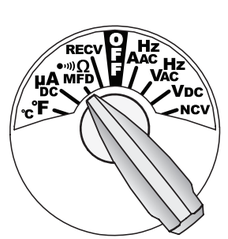
Used for "ohming out" a motor. 0.1Ω resolution is necessary to test the resistance between the motor poles because the values are typically very low. Select MFD/Ω/•)) and press SEL button once.

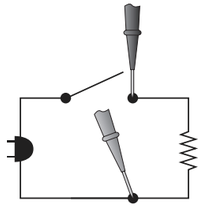
Ranges: 0 to 1000Ω, 1000Ω to 9999Ω
Resolution: 0.1Ω **Overload Protection:** 600VDC/VAC rms
Accuracy: ±(1.5% + 5 dgts)

Continuity (•))

Use the continuity feature to test if a circuit is open or closed. Use this feature to check fuses as well. A steady "beep" and green LED indicate the circuit is good. Select MFD/Ω/•)) and press SEL button twice.

Range: 1000Ω **Resolution:** 0.1Ω **Response time:** 100ms
Audible beep: <30Ω **Overload Protection:** 600VDC/VACrms

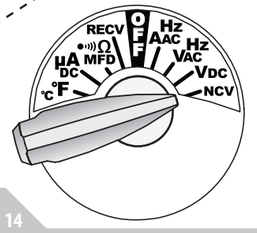


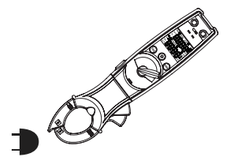


Non Contact Voltage (NCV)

Use the non contact voltage (NCV) feature to test if a wire is hot or not. Always test on a known live source before using. A red LED blinks and beeping sound is emitted at >24VAC.

AC Voltage Detection Range: 24VAC to 600VAC (50-60Hz)





Amps AC (AAC) TrueRMS (50-60Hz)

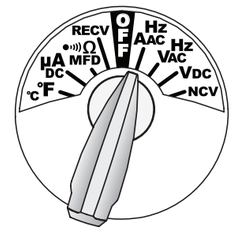
Test any isolated power line. Select AAC/Hz dial position.

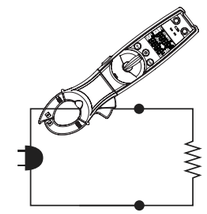
Ranges: 0 to 400AAC **Resolution:** 0.1A **Crest factor:** ≤ 3
Accuracy: ±(2.0% + 5 dgts) 50-60Hz
Jaw Opening: 1.2in (30 mm) **Overload Protection:** 400AAC

Frequency (Hz) Through Clamp

Measure frequency without using test leads, just use the clamp. Turn dial to AAC/Hz and press SEL. Clamp Hz will be displayed.

Range: 20Hz to 400Hz **Accuracy:** ±(0.5% + 5)
Minimum current range: > 5AAC at 20 to 100Hz, >10AAC at 100 to 400Hz **Resolution:** 0.1Hz **Overload Protection:** 400AAC





BatteryReplacement

The battery must be replaced when the battery icon is empty. "bAtt" will display with a beeping sound. Meter will shut off in 5 seconds. Disconnect and unplug leads, turn meter off and remove battery cover.

Safety Information

- Never ground yourself when taking electrical measurements. Do not touch exposed metal pipes, outlets, fixtures, etc., which might be at ground potential, while taking measurements. Keep your body isolated from ground by using dry clothing, rubber shoes, rubber mats, or any approved insulating material.
- Disconnect the test leads before opening the case. Inspect the test leads for damage to the insulation or exposed wire. Replace if suspect. Keep your fingers behind the finger guards on the probes while taking measurements.
- When disconnecting from a circuit, disconnect the "RED" lead first, then the common "BLACK" lead. Use one handed testing when possible. Work with others.
- Turn off power to the circuit under test before cutting, unsoldering, or breaking the circuit.
- Do not measure resistance (ohms) when circuit is powered. Isolate load by disconnecting from circuit.
- 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.
- Do not apply more than rated voltages between input and ground.
- Isolate capacitors from system and discharge them safely before testing.

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

Symbols used:

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

Maintenance

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

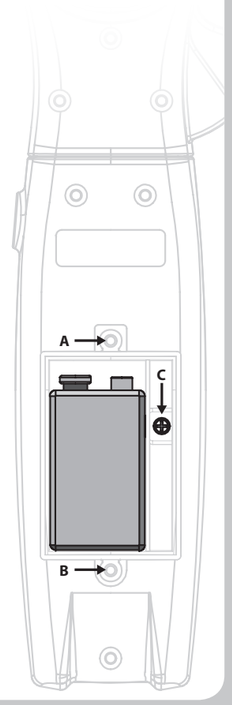
⚠ WARNINGS

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. (Use only k-type thermocouples)
DO NOT APPLY VOLTAGE TO THE JACKS when the rotary dial is on microamps. Even low voltages can cause a current overload and potentially harm the meter.

Temp. 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 °F/ °C range.
2. Plug thermocouple to be calibrated into the K-type jack.
3. Unscrew A and B and remove the battery cover.
4. Stabilize a large cup of ice water. Stir the ice with the water until temperature stays at 32°F (0°C).
5. Immerse the thermocouple probe and let it stabilize. Keep stirring to prevent micro-environments.
6. Use a small screwdriver to adjust calibration pot C to the right of the battery as close to 32°F as you would like.



FCC Compliance and Advisory Statement

This device complies with Part 15 of the FCC rules. Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

This equipment has been tested and found to comply with the limits for a Class B digital device, according to Part 15 of the FCC rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try correct the interference by one or more of the following measures:

1.Reorient the receiving antenna.
2.Increase the separation between the equipment and receiver.
3.Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
4.Consult the dealer or an experienced radio/TV technician for help.

Shielded interface cables must be used in order to comply with emission limits.

FCC Caution: To assure continued compliance, any changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate this equipment.

Fieldpiece
Designed in USA
MADE IN TAIWAN

Limited Warranty

This meter is warranted against defects in material or workmanship for one year from date of purchase from an authorized Fieldpiece dealer. 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

Email Fieldpiece warranty department at fpwarranty@fieldpiece.com for current fixed price repair service. Send check or money order made out to Fieldpiece Instruments for the amount quoted. If your meter is under warranty there will be no cost for the repair/replacement. Send your meter, freight prepaid, to Fieldpiece Instruments. Send proof of date and location of purchase for in-warranty service. The meter will be repaired or replaced, at the option of Fieldpiece, and returned via least cost transportation.

For international customers, warranty for products purchased outside of the U.S. should be handled through local distributors. Visit our website to find your local distributor.

www.fieldpiece.com