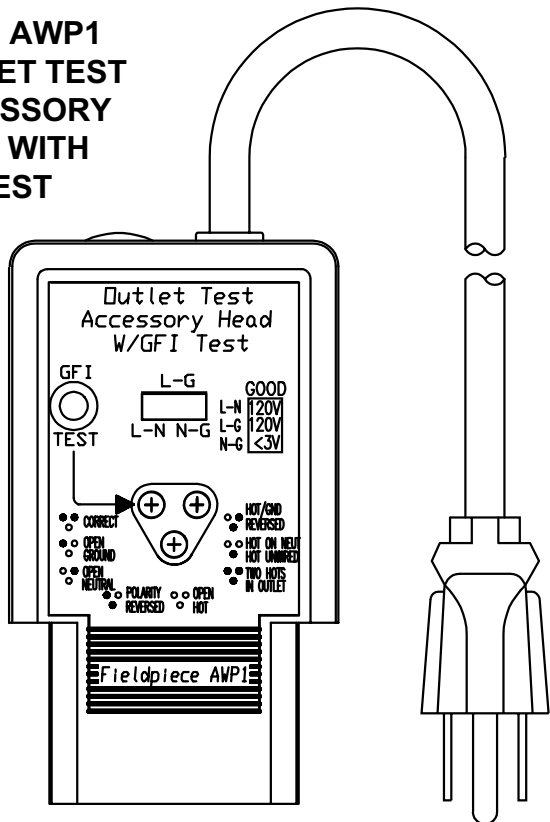
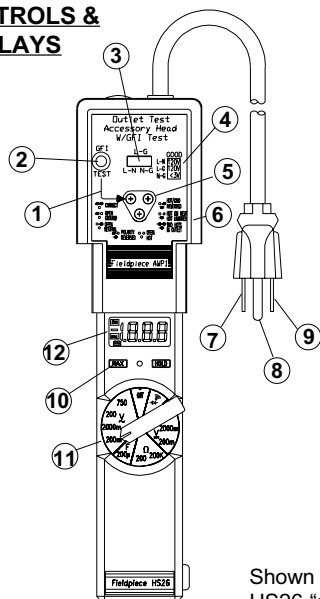


Model AWP1 OUTLET TEST ACCESSORY HEAD WITH GFI TEST



OPERATOR'S MANUAL

CONTROLS & DISPLAYS



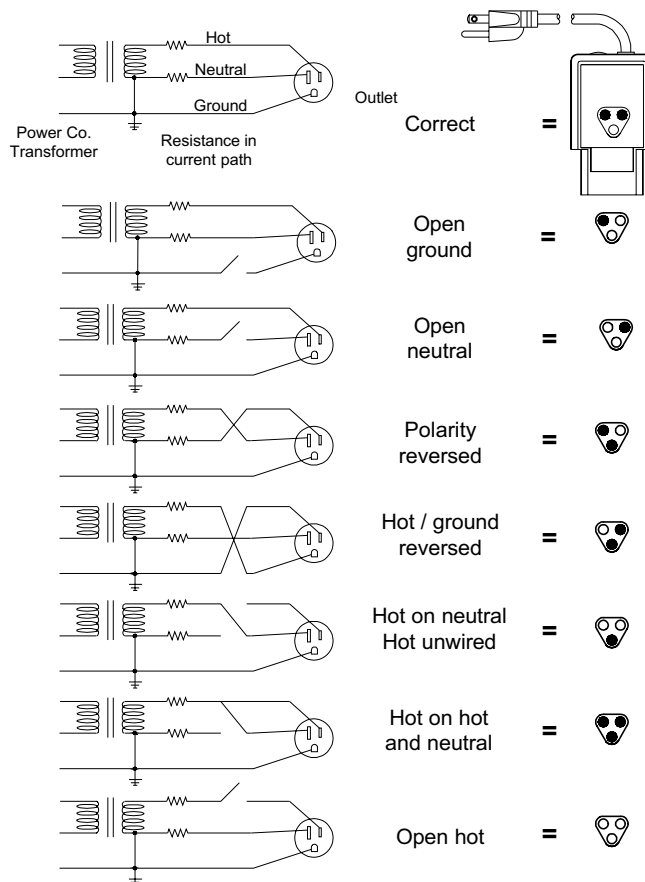
- ① Top two LEDs turn off when GFCI trips
- ② GFCI test button
- ③ Selection switch determines between which 2 prongs the voltage will be measured.
- ④ Identifies typical "OK" values
- ⑤ LEDs
- ⑥ LED patterns that indicate correct or incorrect wiring
- ⑦ Neutral prong (fat)
- ⑧ Ground prong
- ⑨ Hot prong (thin)
- ⑩ MAX HOLD button holds highest reading displayed
- ⑪ Use 200 mV~ range
- ⑫ Displays AC voltage measured at prong

Shown on optional HS26 "stick" meter.

QUICK START

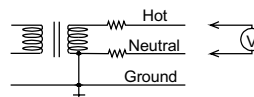
1. Slide AWP1 outlet test accessory head on Fieldpiece "stick" meter or connect to most other meters using Fieldpiece ADL2 deluxe test leads.
2. Set meter to 200mVAC range.
3. Insert plug into outlet.
4. Determine if outlet is wired correctly: compare pattern of lighted LEDs to chart on face of accessory head. CAUTION: if "open ground" is indicated, repair before proceeding.
5. Measure voltages: select test points via slide switch (line-to-neutral, line-to-ground, ground-to-neutral). Volts AC is displayed on meter.
6. GFCI test: push GFCI test button. The top two LEDs should go out (along with any lights connected to the circuit under test).
7. Measure neutral-to-ground under load: plug in your load and AWP1 accessory head into a "splitter" or adjacent outlet on same branch circuit. Select N-G switch position. Volts AC is displayed on meter.

FAULTY WIRING INDICATIONS (LED CODES)



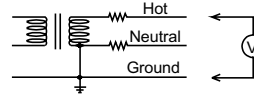
VOLTAGE SELECTION

Line-to-neutral



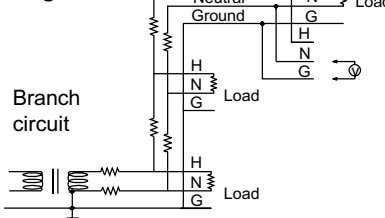
Display VAC.
Nominal voltage is 120VAC.

Line-to-ground



Display VAC.
Nominal voltage is 120VAC.

Neutral-to-ground



Display VAC.
Below 3V is usually okay,
above 5V is not okay.

EXPECTED MEASUREMENTS

LEDs	Description	Switch Selection		
		L-N	L-G	N-G
• •	Correct ③	120V	120V	<3V
• ○	Open Ground	120V	50-70V ①	50-70V ①
○ •	Open Neutral	50-70V ①	120V	50-70V ①
• ○	Polarity reversed or complete miswire	120V	<3V	120V
○ •	Hot/ground reversed or complete miswire	<3V	120V	120V
○ ○	Hot on neutral Hot not wired	50-70V ①	50-7-V ①	120V
• •	Two hots in outlet	0, >200V ②	120V	120V
○ ○	Open hot	<1V	<1V	<3V

- ① Reading is due to circuitry inside accessory head. This is not the voltage that you would measure with a DMM plugged directly into the outlet
- ② 0 volts if in phase, >200 volts if 180° out of phase.
- ③ If L-N voltage is higher than L-G, N and G are reversed.

DESCRIPTION

The AWP1 outlet test accessory head performs four functions:

1. Identifies incorrectly wired outlets.
2. Safely measures line-to-neutral, line-to-ground, and neutral-to-ground voltages at a three pronged 120V outlet. Allows user to easily select voltages to measure and watch fluctuations as loads turn on and off on the branch circuit.
3. Measures the effect on neutral-to-ground voltage when connecting load. High neutral-to-ground voltage may indicate the circuit is overloaded, poorly wired, or the wire circuit breaker and/or connections have high resistance.
4. Tests the ground fault circuit interrupter (GFCI). A GFCI is a protective device that disconnects the circuit if it senses too much current flowing to ground (presumably through a person or other incorrect path).

Problems caused by poorly wired branch circuits and outlets include lost or garbled data, computer lockups and resets, power supply failure, some equipment being effected when other equipment is turned on, and network loss.

USE WITH METERS WITH "MAX HOLD"

You're often looking for the highest reading as things change. This is specially true with neutral-to-ground readings as loads come on and off. The "MAX HOLD" on the Fieldpiece HS26 or HB74 holds the largest reading after the button is pushed. The user does not need to be present when it occurs.

VOLTAGE DROPS DUE TO LOAD

Current (drawn by loads) flowing through even low resistance conductors causes voltage drops. The larger the currents being drawn and the further down the branch circuit those loads are, the larger the voltage drops at each outlet. The higher the resistance in the wire, the larger the voltage drop will be. (Ohm's law: $V=I \times R$.)

Small diameter wire, aluminum wire, faulty circuit breakers and poor connections can cause the resistance to be higher and contribute to the voltage drop. Electrical noise or distorted wave forms can also add to excessive neutral-to-ground voltage. Currents from other circuits sharing the same neutral contribute too. Neutral-to-ground voltages on an unloaded branch circuit can indicate a shared neutral.

NEUTRAL-TO-GROUND

At the transformer, the neutral-to-ground voltage is near zero. Because there is a voltage drop along the neutral (due to current flow) and there's no drop on the ground (because no current is flowing) a voltage will be generated between ground and neutral. The voltage between neutral and ground can be measured at the outlet.

Electronic equipment is sensitive to voltages between neutral and ground. In general, you should not have problems under 3V, above 5V you're more likely to have problems such as lost or garbled data, computer lockups and resets, power supply failure, some equipment being affected when other equipment is turned on, and network loss.

To determine if a new load will cause excess voltage drop, plug in the new load to the other outlet in a duplex outlet or use a splitter on an outlet. When it and all the other loads on the branch circuit are on, the voltage between neutral and ground will be at its highest. Use a meter with "Max Hold" to catch the highest reading.

NEUTRAL AND GROUND REVERSED

Normally the line-to-ground voltage will be higher than line-to-neutral by half of the neutral-to-ground. If line-to-neutral is higher, the neutral and ground may be reversed.

FALSE GROUND

An extremely low neutral-to-ground voltage with loads connected and drawing current may indicate the ground and neutral were improperly connected. (There must be current flowing, otherwise there should be no voltage between the ground and neutral.)

GROUND FAULT CIRCUIT INTERRUPTER TEST

The ground fault circuit interrupter (GFCI) is a circuit breaker that senses current flowing to ground. If the current flowing to ground is too high, the breaker is opened. This prevents large currents from flowing to ground through a person or other current path.

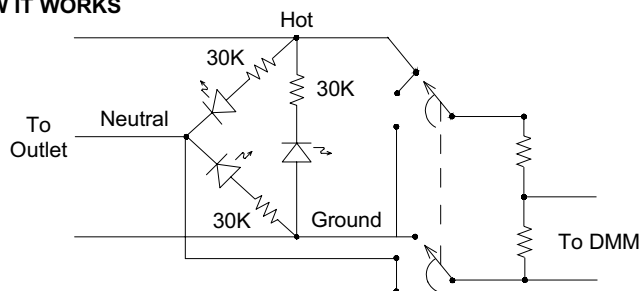
To test the GFCI, press the GFCI button on the AWP1 accessory head. The AWP1 will draw 6 to 9 mA, which is enough to trip a good GFCI. The two top LEDs (a correctly wired GFCI) will go off and the voltage readings will drop to zero indicating power has been disconnected.

CAUTION: this test will cause lights on the GFCI circuit to go off. Make sure you have a flashlight handy.

SPECIFICATIONS

Conversion rate: 1mVAC/1VAC
Input voltage: 102 to 132 VAC @ 50/60 Hz
Output voltage: 102 to 132 mVAC
Accuracy: ± 0.3 VAC
Input impedance: 30K Ω
GFI test: 6-9mA
Operating temp: 32° to 122° F
Storage temp: -4° to 140° F
Line cord: 18 AWG X 36 w/NEMA 5-15P Plug
Cord length: 36"
Dimensions: 4.4" H X 2.5"W X 1.1"D
Case: GE Valox plastic
Designed to meet requirements of UL1436

HOW IT WORKS



An LED lights when there's enough voltage. The switch selects the voltage you want to measure. The resistors divide the voltage to a low level.

FOR YOUR SAFETY...

The AWP1 outlet test accessory was designed to be safe. It converts the incoming 120VAC to mVAC at 1mVAC/1VAC. Less than 200mVAC will appear on the banana plugs. Fire retardant plastic has been used. Electricity can cause severe injury or death even with low currents and voltages. Read this information before using the meter and follow all safety practices and operating instructions for the equipment being tested.

OBTAINING SERVICE

If the problem still exists, call Fieldpiece to get an RMA (714-992-1239) and send the product freight prepaid to:

Fieldpiece Instruments
231 E. Imperial Highway Suite 250
Fullerton, CA 92835

For warranty service also send proof of date and location of purchase. For out-of-warranty service send \$20, check or money order. Do not send cash. The product will be completely repaired or replaced, at the option of Fieldpiece, and returned to you via least cost transportation. Response time is typically 24 hours after receipt of accessory.

ONE YEAR LIMITED WARRANTY

This accessory is warranted to the original purchaser against defects in material or workmanship for a period of one year from the date of purchase. During the warranty period, Fieldpiece Instruments will, at its option, replace or repair the defective unit, subject to verification of the defect or malfunction. 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. THE MANUFACTURER 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 OR CLAIMS FOR SUCH DAMAGE, EXPENSES, OR ECONOMIC LOSS.

State laws vary, so 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.



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