

# OPERATOR'S MANUAL

**Model APT2**  
**Absolute Polarity Analyzer**

## **OPERATOR'S MANUAL MODEL APT2**

The Gold Line Polarity Analyzer utilizes state of the art signal processing to accurately determine absolute polarity which is unimpaired by passive crossovers or signal waveform distortions produced by the device under test. The Absolute Polarity Analyzer works on tweeters, mid-ranges, woofers, subwoofer speakers and cabinets, equalizers, amplifier and crossovers. With this handy instrument an entire speaker system can be checked in only seconds.

### **THEORY OF OPERATION**

The Gold Line Polarity Analyzer analyzes the initial rise and the peak amplitude of a repetitive acoustic pulse picked up by an internal condenser microphone to determine and indicate the absolute polarity of the acoustic pulse. A repetitive test pulse signal, with a fast rise and a known polarity is applied to the loudspeaker under test, with or without its normally associated amplifier. The Polarity Analyzer contains special discriminating circuitry to minimize the influence of loudspeaker (preshoot) transient distortion which varies greatly from speaker to speaker and, unless properly screened, is a potential source of false polarity indication. To check acoustical or electrical polarity, the generator is connected to the input of the device under test. The detector is utilized to pick up the output signal. The analyzer section processes the information and decides whether the device under test reverses signal polarity or not. The results are displayed via two LEDs: (+) or POSITIVE-GOING POLARITY and (-) or NEGATIVE-GOING POLARITY. THE APT2 features the Polarity Analyzer and the Pulse Generator as separate units allowing the user greater mobility in halls or stadiums since the generator portion can be placed in the most convenient location. The polarity analyzer portion contains two LEDs to indicate POSITIVE-GOING POLARITY or NEGATIVE-GOING POLARITY, the pick up microphone and the push to activate button. The polarity analyzer portion operates on its own 9 volt battery. The pulse generator unit has a RED flashing LED to indicate when the generator is in operation. The generator module has separate ¼ inch phone jack outputs for either a line level output signal or a signal capable of driving speakers without amplification. The generator portion is also powered by its own 9 volt battery and is turned ON or OFF by inserting or removing a ¼ inch phone plug from the phone jack output.

### **OPERATING INSTRUCTIONS**

#### **SPEAKER POLARITY TEST**

1. Speaker leads should be terminated with a ¼ inch phone plug. The tip should be (+) positive.
2. Activate the PULSE GENERATOR by inserting the phone plug into the phone jack marked SPEAKER. A one second interval strobing pulse should be indicated by the RED LED and heard from the speaker.
3. Activate the POLARITY ANALYZER by pressing the push to activate button on the front panel, and hold the analyzer in front of the speaker preferably centered and if possible as close as two or three feet. One of the LEDs should light for about 1/3 second on each pulse indicating the absolute acoustic polarity: (+) indicates positive-going acoustic polarity (the speaker cone is displaced towards the analyzer creating a positive air pressure pulse). This also means that the positive (+) terminal of the speaker (usually coded with a red dot) is connected to the TIP of the phone plug. Conversely, (-) indicates negative-going polarity and means that the positive (+) terminal of the speaker is the one connected to the SLEEVE of the phone jack.

#### **SPEAKER PLUS AMPLIFIER TEST**

1. Make sure system is off. Set amplifier volume control to minimum.
2. Plug one end of a shielded audio cable into the input of the amplifier for the system under test.
3. Activate the PULSE GENERATOR by inserting the other end of the cable into the phone jack marked LINE. A one second interval pulse should be indicated by the RED LED.
4. Activate the amplifier and advance the volume control to set a normal acoustic level. A one second interval pulse should be heard from the speaker.
5. Activate the POLARITY ANALYZER by pressing the push to activate button and sequentially hold it in front of each speaker to be tested, preferably centered, and about two or three feet away from the speaker. Note the LED indication for each speaker. One of the LEDs should light for about 1/3 second on each pulse indicating the overall absolute polarity relation between the acoustic output and the amplifier input receiving the test signal: (+) indicates positive-going acoustic polarity and (-) indicates negative-going polarity. Generally all speakers in a multiple system are intended to have the same polarity.

## ANALYZER SPECIFICATIONS

**LED Indication:** 300ms ON duration per pulse typical.

( + ): indicates positive-going pulse polarity.

( - ): indicates negative-going pulse polarity.

**REQUIRED ACOUSTIC LEVEL AT ANALYZER:** useful range 70dBc to greater than 110dBc. **BATTERY:** 9Volt

**BATTERY DRAIN:** Mainly from LED approx. 20mA peak instantaneous.

## PULSE GENERATOR SPECIFICATIONS

### **PULSE WAVEFORM:**

Repetition rate: 1s nominal

Polarity: Positive-going

**LINE OUTPUT PULSE** for driving an amplifier input:

Amplitude: 0.4V peak typical

Rise time: <100  $\mu$ s

Fall time: 40 ms typical

Source impedance: 50  $\Omega$  nominal

Duty factor: 0.3% typical

Battery drain line output: 1.1mA average

**SPEAKER OUTPUT PULSE** for driving a loudspeaker directly:

Amplitude: 6.5V peak to 4 $\Omega$  speaker (9V battery)

Rise time: <100  $\mu$ s

Fall time: 1.5ms typical

**POWER:** 14 watts peak instantaneous (4 $\Omega$  speaker, 9V battery.)

Duty factor: 0.15% typical

Battery saver circuit: Cuts in when no speaker is connected.

Battery drain: 3.2mA with 4 $\Omega$  speaker.

### WARRANTY and Factory Service

GOLD LINE products are proudly made in the USA and are covered by a one year limited warranty. For details of this warranty, consult the enclosed warranty registration card or your local dealer.

GOLD LINE Customer Service will help you get the most from your new analyzer. For answers to questions regarding use of the unit, or for information not covered in this manual, please write us. If you are experiencing difficulties with your analyzer, please consult your dealer regarding factory service. If factory service is needed, you may call or fax us between 9:00am and 4:30pm US Eastern Time for instructions and a return authorization.

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Enter your serial# \_\_\_\_\_ date of purchase \_\_\_\_\_



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