



MAKERS OF THE ORIGINAL HOT SPOT PERSONAL MONITOR

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POLARITY TEST SET

OWNERS MANUAL



MAKERS OF THE ORIGINAL HOT SPOT PERSONAL MONITOR

CRICKET POLARITY TEST SET SPECIFICATIONS

CRICKET-S Pulse Generator:

PULSE WAVEFORM

Polarity: positive-going

BALANCED LINE OUTPUT PULSE: Switch selectable for hi or low level balanced signal with positive pressure produced at tip of 1/4" jack and pin #2 of XLR jack

SPEAKER OUTPUT PULSE: Accepts minimum 2 Ohm load with positive pressure produced at tip of 1/4" speaker jack and positive terminal of internal speaker

CASE DIMENSIONS: 3.33"W 1.75"H 5.25"L

WEIGHT (with battery): 11 oz.

BATTERY: 9 volt, alkaline only

CRICKET-R Pulse Detector

LED INDICATION

GREEN: indicates positive-going pulse polarity with power switch in "ON" position and battery status with power switch in "BAT" position

RED: indicates negative-going pulse polarity

DETECTION INPUTS: 1-1/4", balanced
1-XLR, balanced

MIC SENSITIVITY: -64dB, +/-3dB

FUNCTION SELECT: Polarity only or continuity

CASE DIMENSIONS: 3.33"W 1.75"H 5.25"L

WEIGHT (with battery): 10.5 oz.

BATTERY: 9 volt, alkaline only

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I. How the Cricket works

A. Send unit:

1. OFF-ON: This switch turns the unit on and off.
2. LO-HI-SPKR:
 - a. LO: Produces balanced low level output on the 1/4" balanced and XLR jacks with pin #1 and sleeve ground, pin #2 and tip positive, and pin #3 and ring negative.
 - b. HI: Produces balanced hi level output on the 1/4" balanced and XLR jacks with pin #1 and sleeve ground, pin #2 and tip positive, and pin #3 and ring negative.
 - c. SPKR: Produces a positive acoustic output from the internal speaker which is disconnected when the 1/4" unbalanced jack is used. This output will drive a speaker directly with tip positive.

B. Receive unit:

1. OFF-BAT-ON: This switch turns the unit on and off. With the switch in the BAT position, the green LED lights if the battery is good. Replace the battery if the green LED does not light or is very dim.

B. Balanced cable fault indications.

1. An intact properly polarized device will light the green LED in the 2-T position and the red LED in the 3-R position.
2. If #1 or sleeve is open or there is a dead short between any two conductors, neither LED will light.
3. If #2 or tip is open, no LED will light in the 2-T position and the red LED will light in the 3-R position if #1/sleeve and #3/ring are intact and properly polarized.
4. If #3 or ring is open, the green LED will light in the 2-T position and no LED will light in the 3-R position if #1/sleeve and #2/tip are intact and properly polarized.
5. If #1/sleeve and #2/tip are reversed and #3/ring is intact, the red LED will light in the 2-T position. No LED's will light in the 3-R position.
6. If #1/sleeve and #3/ring are reversed and #2/tip is intact, the green LED will light in the 3-R position. No LED's will light in the 2-T position.
7. If #2/tip and #3/ring are reversed and #1/sleeve is intact, the red LED will light in the 2-T position and the green LED will light in the 3-R position.

C. Unbalanced device continuity and polarity:

1. In the 2-T position the green LED should light. If the red LED lights, the circuit is reversing the polarity. If neither LED lights then there is either a short between #1/shield and #2/tip or an open circuit.
2. In the 3-R position most unbalanced devices ground these connections. Whatever the case, no LED's should light in this position.

Quick reference charts are located on the bottom of the Send and Receive units.

II. Battery Installation for both Send and Receive units (Use only alkaline batteries)

1. Remove the single phillips head screw from the battery door on the top of the case.
2. Lift up the door and remove it from the case.
3. Locate the battery terminal snap and attach a 9 volt alkaline battery to it.
4. Slide the battery into the clip mounted to the under side of the battery door.
5. Reinstall the battery door to the case, making sure no wires are pinched in the door.
6. Reinstall the single phillips head screw.

III. How to set units for testing.

A. Send unit.

1. LO-HI-SPKR: To test speaker polarity put the selector switch in the "SPKR" position and use the 1/4" jack marked "EXT SPKR". To test balanced cable polarity/continuity set the selector switch to the "LO" position and use either of the jacks marked "BALANCED OUT". To test an unbalanced cable for polarity/continuity set the selector switch to the "HI" position and use the appropriate "BALANCED OUT" jack. The "HI" position may also be used for tests that involve connecting to the input of an amplifier where the "LO" position is first proven to be too low a level signal to conduct

3. Set receive unit to "MIC", and the "CON/POL" switch to "POL".
4. Hold the receive unit directly in front of the speaker, 1/2" to 2" away.
5. A speaker that is in proper polarity (positive signal moves cone away from magnet) will light
6. An out of polarity speaker will light the red LED.

F. Testing the polarity of flown speakers, or distributed system speakers in permanent installations.

1. Test amplifier as in "C", above.
2. Turn down the system's amplifier and, using a known good cable, connect the send unit's 1/4" balanced output to the system amplifier's input. If the amplifier has a balanced input, an intact, properly polarized three conductor cable should be used. If the amplifier has an unbalanced input, use a good two conductor cable terminated with only #1 or sleeve and #2 or tip properly connected to three conductor connectors.
3. Set the send unit to "Lo" and slowly turn up the amplifier to a comfortable level. If enough gain is not available, turn the amp down, set the send unit to "Hi" and slowly turn up the amp. If suitable gain is still not available, turn down the amplifier and connect the send unit's 1/4" unbalanced "EXT SPKR" output to the amplifier's input. Turn the amplifier up to a comfortable level.
4. Set the receive unit to "MIC" position and the "CON/POL" switch to "POL" position. Point it, on axis, towards the speaker you are testing,

and turn up the receiver's gain until only one LED lights. For rooms with high ceilings, multi-transducer clusters, or highly reverberant conditions, it may be necessary to attach the receive unit to a piece of conduit or broomstick to obtain proper proximity to the source.

5. A speaker that is in proper polarity (positive signal moves cone away from magnet) will light the green LED.
6. An out of polarity speaker will light the red LED.

V. What does all this mean?

A. Balanced device polarity:

1. An intact properly polarized device will light the green LED in the 2-T position and the red LED in the 3-R position.
2. If there is a dead short between any two conductors, neither LED will light.
3. If #2/tip and #3/ring are reversed the red LED will light in the 2-T position and the green LED will light in the 3-R position.
4. Any other combinations of LED's lit, or the presence of hum when the device is in use, indicate opens or reversals that warrant visual inspection, repair, and re-testing.

NOTE: Proper and reverse polarity of #2/tip and #3/ring will be indicated whether #1/shield is intact or not when tests are performed with the "CON/POL" switch in the "POL" position.

2: MIC, 2-T, 3-R:

- a: MIC: Connects the LED metering circuit to the microphone located in the back of the unit. If the mic receives a positive pressure, the green LED lights. If the mic receives a negative signal, the red LED lights.
- b: 2-T: Connects the LED metering circuit to pin #2 of the XLR jack and the tip of the 1/4" jack. If pin #2 or tip is positive, the green LED lights. If it is negative the red LED lights.
- c: 3-R: Connects the LED metering circuit to pin #3 of the XLR jack and the ring of the 1/4" jack. If pin #3 or ring is positive, the green LED lights. If it is negative the red LED lights.

3: CON/POL:

- a: CON: Allows the receive unit to be used as a cable tester, offering specific indications of fault conditions.
- b: POL: Allows the receive unit to be used strictly for polarity testing. A particularly useful setting for direct testing of most dynamic microphones and certain transformer balanced outputs and splits that are not referenced to ground.

4. GAIN: This control is a sensitivity control connected to the input of the metering circuit.

B. Cables:

1. **Balanced:** Connect cable between send and receive units using the balanced jacks. Put the selector switch on the send unit in "LO" position and the "CON/POL" switch on the receive unit in the "CON" position. On the receive unit a properly polarized cable will light the green LED with the front panel switch in the 2-T position and the red LED in the 3-R position. Cable must be tested in both positions.
2. **Unbalanced:** Connect the cable between the send and receive units using the balanced jacks. Put the selector switch on the send unit in "HI" position and the "CON/POL" switch on the receive unit in the "CON" position. With the front panel switch in the 2-T position a properly polarized cable will light the receive unit's green LED. In the 3-R position no LED's will light on the receive unit.

See Section V for more information on fault indications

C. Amplifiers, mixers, etc: (Polarity check through device)

1. Set send unit to "LO" position. Set receive unit "CON/POL" switch to "POL" position.
2. Connect send unit to the input of the device you are testing, using a known good cable.
3. Set the receive unit to 2-T and connect it to the output of the device you are testing, using a known good cable.
4. A non-inverted signal will light the green LED.

5. Test the 3-R position; a non-inverted signal from a balanced output will light the red LED. If the output you are testing is unbalanced, a non-inverted signal will not light either LED in the 3-R position.

D. Condenser microphones using phantom power:

1. Test the mixer and input and output cables. (See B & C above)
2. Using a known good cable, connect the mic to the mixer, make sure that the phantom power is on, set the send unit to "SPKR" position and hold it so that its' internal speaker is directly in front of and 1/2" to 1" from the microphone being tested.
3. Set the receive unit's "CON/POL" switch to "POL", its front panel selector to the 2-T position, and connect it to the output of the imixer using an appropriate, known good cable. A non- inverted signal will light the green LED.
4. Test the 3-R position; a non-inverted signal from a balanced output will light the red LED. If the output is unbalanced, a non-inverted signal will not light either LED in the 3-R position.
5. In a balanced system you need only test the mic in one position, 2-T or 3-R.

E. Dynamic microphones and condenser microphones using batteries:

1. Test a mic cable. (See B above)
2. Set the send unit to "SPKR" position and hold it so that its' internal speaker is directly in front of and 1/2" to 1" from the microphone being tested.
3. Set the receive unit's "CON/POL" switch to "POL", its front panel selector to the 2-T position, and plug the microphone into the appropriate balanced input. A non-inverted

- signal will light the green LED.
4. Test the 3-R position; a non-inverted signal from a balanced output will light the red LED. If the output is unbalanced, a non-inverted signal will not light either LED in the 3-R position.
 5. In a balanced system you need only test the mic in one position, 2-T or 3-R.

F. Wireless microphones:

1. Test a cable appropriate for connection to the output of the wireless receiver. (See B above)
2. Set the send unit to "SPKR" position and hold it so that its' internal speaker is directly in front of and 1/2" to 1" from the microphone being tested.
3. Set the receive unit's "CON/POL" switch to "POL", its front panel selector to the 2-T position, and plug the wireless receiver's output into the appropriate balanced input. A non-inverted signal will light the green LED.
4. Test the 3-R position; a non-inverted signal from a balanced output will light the red LED. If the output is unbalanced, a non-inverted signal will not light either LED in the 3-R position.
5. In a balanced system you need only test the mic in one position, 2-T or 3-R.

G. Speakers:

1. Set the send unit to "SPKR" position.
2. Use a known good cable to connect from the send unit's 1/4" unbalanced speaker jack to the speaker you are testing.

the test and the polarity being checked is that of a speaker connected to the amplifier output. **Never** use the "HI" position for balanced continuity tests, as continuity fault indications are available only for unbalanced conditions in this position.

- B. Receive unit: When you first turn the unit on, and after extended use, you should test the battery, using the power switch "BAT" position. A weak battery can cause erratic readings.
 1. CON/POL: (located on rear panel) This switch should generally remain in the "POL" position for all tests other than cable tests. When testing balanced or unbalanced cables use the "CON" position. **Never** use the "POL" position when testing cables, as the only fault indication available in this position is for reversal of polarity, which, alone, may not indicate that a cable is, in fact, properly terminated.
 2. GAIN: **ALWAYS** start with the gain control in the fully counterclockwise position, bringing it up slowly until only one LED lights.

IV. How to test

- A. Self test: Set the send unit to "SPKR" position, receive unit to "MIC" and "POL". Place the receive unit directly (1" to 3") in front of the send unit's speaker. The green LED should light on the receive unit.