



IsoMeter

OPERATION MANUAL



TRILITHIC

The Best Thing on Cable



TRILITHIC

TRILITHIC, Inc., one of the fastest growing privately held companies in the U.S. (Inc. 500, #10), is a leading supplier of test equipment to the CATV industry. Through the years, we have introduced a range of products to make CATV maintenance simpler, faster and more precise. Our contributions include the first PRACTICAL CATV sweep system (1976), the first CATV return adjustment system (1981), the SEARCHER PLUS for leakage measurement (1989) and the SUPER PLUS for overbuilt leakage and ingress measurement (1994).

Among our most popular products is the TRICORDER series of CATV analyzers (led by the new TRICORDER III, the most versatile member of the popular TRICORDER family).

TRILITHIC is especially well known for its leakage products. More than 15,000 SEARCHER PLUSES are in daily use as well as the SUPER PLUS and SUPER CT measurement devices (which take leakage measurement into the new era of overbuilds and digital services).

In addition to developing instrumentation for the CATV industry, TRILITHIC produces RF and microwave components and equipment for aerospace and wireless communications, as well as computer controlled assemblies for automated test systems, headend automation and communications signal routing.

TRILITHIC products are designed and manufactured at our facility in Indianapolis, Indiana. These products are distributed by sales agents in over 40 countries.

Should you have any questions or need our service, please contact us at the address or telephone numbers below:

TRILITHIC, Inc.
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Indianapolis, IN 46236
(317) 895-3600
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TWO YEAR WARRANTY

Trilithic, Inc. warrants that each part of this product will be free from defects in materials and workmanship, under normal use, operating conditions and service for a period of two (2) years from date of delivery. Trilithic, Inc.'s obligation under this Warranty shall be limited, at Trilithic, Inc.'s sole option, to replacing the product, or to replacing or repairing any defective part, F.O.B. Indianapolis, Indiana; provided that the Buyer shall give Trilithic, Inc. written notice.

Batteries are not included or covered by this Warranty.

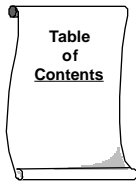
The remedy set forth herein shall be the only remedy available to the Buyer under this Warranty and in no event shall Trilithic, Inc. be liable for incidental or consequential damages for any alleged breach of this Warranty. This Warranty shall not apply to any part of the product which, without fault of Trilithic, Inc., has been subject to alteration, failure caused by a part not supplied by Trilithic, Inc., accident, fire or other casualty, negligence or misuse, or to any cause whatsoever other than as a result of a defect.

Except for the warranty and exclusions set forth above, and the warranties, if any, available to the Buyer from those who supply Trilithic, Inc., there are no warranties, expressed or implied (including without limitation, any implied warranties of merchantability of fitness), with respect to the condition of the product or its suitability for any use intended for it by the Buyer or by the purchaser from the Buyer.



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GENERAL INFORMATION



Introduction

Congratulations! You now own Trilithic's **Guardian IsoMeter**. This instrument is designed specifically to detect the presence of reverse band leakage by checking the shielding of the subscriber's in home wiring.

One of the more common problems in the return path of your system is signal ingress generated within the subscriber's home. Motorized devices such as hair dryers and electric mixers can cause ingress which can block digital signals within the reverse path spectrum.

Ideally, the solution is not to allow the ingress to enter the coaxial environment. The easiest way to test the integrity of home cabling is to inject a low frequency signal that has been "tagged" with Trilithic's patented tagging system. The IsoMeter reverse leakage detector enables you to test the shielding effectiveness of that cabling to determine how well it resists ingress.

The IsoMeter is designed to work with the **Guardian RSVP**. Use the RSVP to inject a special reverse frequency test signal into the house cabling. You can then use the IsoMeter, which is tuned to 28 MHz, to track down any points in the cabling where the test signal is detectable.

If 28 MHz leaks are detected, you can find them by listening to the IsoMeter's audible tone and moving in the direction which causes a rise in pitch.

The IsoMeter detects only the carrier that has been "tagged" and ensures that you are detecting signals from your system only. This eliminates the costly time that you spend chasing down false alarms.

The unit is designed for narrow band selectivity which enables you to make sure its searching for YOUR exact signal frequency.

The IsoMeter is designed to be worn on your belt, slipped into your shirt pocket or held in your hand. It has three function buttons on the front panel and three colored LED indicators on the top of the unit.

The IsoMeter comes with the following features:

- Flexible antenna
- Belt clip
- Internal NiMH battery
- Rugged, moisture-resistant, high-impact case



ISOMETER WALKTHROUGH

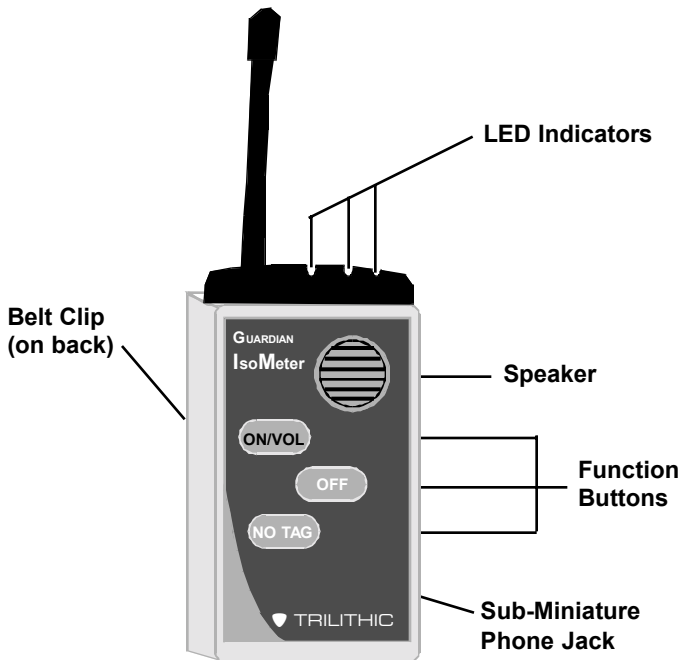


Introduction

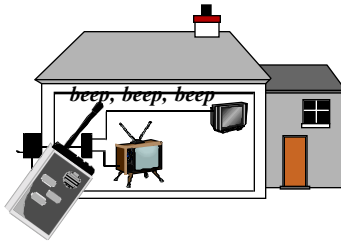
Now that you have your IsoMeter out of its box, take a few moments to look it over so that you become familiar with its controls.

Identify Components

The Guardian IsoMeter's function buttons are on the front panel. The unit's indicator LEDs are located on the top. A sub-miniature phone jack for the charge cube is located on the side of the unit. The belt clip is located on the back of the unit.



- **ON/VOL** button – powers unit ON and toggles volume between HI and LO.
- **OFF** button – powers down unit.
- **NO TAG** button – press this button to disable the Super Leak detector momentarily.
- **RED LED** – indicates HIGH RANGE.
- **YELLOW LED** – indicates battery is low.
- **GREEN LED** – indicates that unit is on or charging.
- **Sub-Miniature Phone Jack** – connects the unit to it's battery charge cube.
- **Speaker** – provides audible tone that varies in frequency with the signal intensity.
- **Belt Clip** – enables user to attach unit to belt.



ISOMETER OPERATION

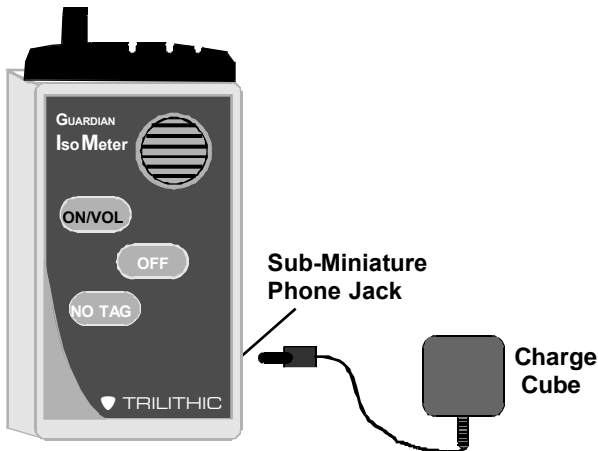


Introduction

The IsoMeter is easy to use and almost elegant in its straightforward solution to the problem of “sniffing out” signal ingress in your cabling system.

Charge Unit

When you first take your IsoMeter out of it’s box, we recommend that you charge it overnight or for 14 hours before using. Simply plug the connector of the charge cube into the sub-miniature phone jack on the side of the IsoMeter.



Then plug the charge cube into an outlet.

NOTE: The IsoMeter must be OFF when connected to the charge cube or its battery will NOT charge. Newer units (S/N 143711 or higher) are equipped with automatic shut off so it is not necessary to turn them off manually.

While the IsoMeter’s battery is charging, the GREEN LED will be lit with a steady glow.

The IsoMeter's NiMH battery allows continuous operation for up to 8 hours. When the battery is getting low, the YELLOW LED starts *flashing*.

Operation

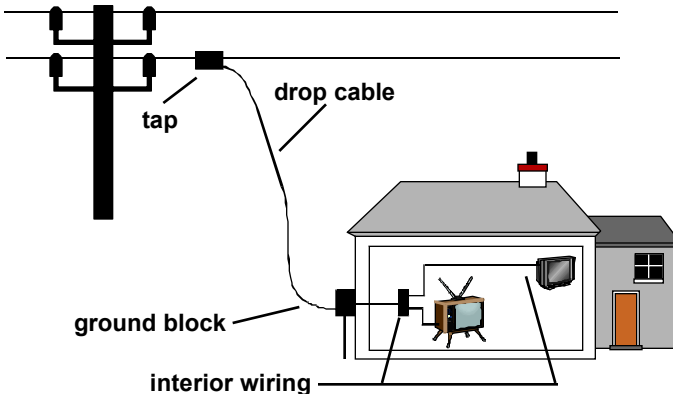
To use the IsoMeter, first set the RSVP's SOURCE Mode for + 30 dBmV and tagged modulation (refer to the RSVP OPERATION MANUAL for this procedure). Be sure it is set to the same frequency as your IsoMeter. The RSVP generates a special reverse frequency signal which you can then inject into the house cabling at the ground block. As you use the IsoMeter, you may find that you need to increase the RSVP's SOURCE Mode from the initial + 30 dBmV for greater sensitivity.

PRESS the **ON/VOL** button on the IsoMeter to turn the unit ON.



The GREEN LED *blinks* to indicate that the IsoMeter is ON. The unit comes on in low volume. If you prefer to use the high volume, PRESS the **ON/VOL** button to *toggle* the unit to HI. You can *toggle* back to LO by pressing the **ON/VOL** button again. A *beep* indicates the changes in volume.

Once the IsoMeter is ON, you use it to track down any points in the cabling where the test signal is detectable both inside the subscriber's home and around the ground block. You can also connect the RSVP to the drop cable at the tap to check the integrity of the drop cable.



You will use the IsoMeter for close-in work rather than for wide sweeps outside of the subscriber's home. Normally, you will use the IsoMeter within a few feet to a few inches of the cable.

The best way to proceed is to terminate all outlets and use your IsoMeter to determine that all of the wiring and connections are good. Then, reconnect your customer's cable devices one by one and use the IsoMeter to check for leakage as each one comes on line.

NOTE: One piece of bad coax or faulty connection can cause leakage to appear on all of the wiring. It may be necessary to disconnect parts of the wiring to find a fault.

Ideally, you don't want to hear anything until you are right next to the wire. However, if 28 MHz leaks are being emitted, you can locate them by listening to the IsoMeter's audible tone. Move the unit along the wiring. As you approach a leak, the tone increases in pitch. If the leak is very strong, the IsoMeter goes into high range and the RED LED starts *flashing*. The audible tone will also be interrupted in sync with the HI range LED.

CAUTION: The IsoMeter may overload even in HI range when it is in the presence of extremely large signals (in excess of 10,000 $\mu\text{V/m}$).

If this occurs, a tagged signal in HI range will suddenly lose audio while the signal intensity and audio frequency are increasing. To hear the audio under these conditions, PRESS the **NO TAG** button.

That's all there is to it.

Normally, you will use the IsoMeter in its "tagged" default setting. If you wish to disable the "tag" function temporarily so that you can check for the presence of strong interference, just PRESS the **NO TAG** button.



The IsoMeter squelch sensitivity may be reduced by adjusting the internal squelch control. This control is accessed through the opening in the back of the unit; just below the belt clip. To make the IsoMeter require more signal to break squelch and enable the audio tone, turn the internal squelch control *Counter-Clockwise*.

Once you have checked the cabling for 28 MHz leakage signals, PRESS the **OFF** button to turn the IsoMeter OFF.





ADDITIONAL INFORMATION



Specifications

The specifications for your Guardian IsoMeter are as follows:

Operating Frequency	28 MHz
Frequency Stability	0.0025% over operating temperature
Receiver Bandwidth	± 3 kHz at operating frequency
Operating Temperature	0° – 50°C operating frequency
Alarm Indication	Audio Tone with pitch proportional to received signal strength and RED LED for high range
LED Indicators	Red – High Range Yellow – Low Battery Green – Power On (<i>flashing</i>) Charging (<i>steady</i>)
Power	Internal rechargeable NiMH battery with external charger. 110 VAC/60 Hz or 220 VAC/50 Hz
Battery Life	Up to 8 hours of operation on a single charge
Weight	4.2 oz. (0.116 kg)
Dimensions (excluding antenna)	4.15”H x 2.43”W x 0.91”D (1.22”D with speaker grill and belt clip)



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