

# The Longwire Impedance Matcher

## by Durham Radio



Thank you for purchasing our Longwire Impedance Matcher (LIM). Please take a few minutes to read this instruction sheet. It will help you to understand what your LIM does and how to use it. The Longwire Impedance Matcher has been carefully designed and tested and produced stronger signals on all antennas it was tested with. Results were identical to devices costing over twice as much!

### Introduction

A random, longwire or beverage antenna has a high characteristic impedance and although the impedance changes with frequency, it is typically about 450 ohms. Meanwhile, the impedance of the coaxial antenna input on most shortwave receivers is 50 ohms.

Connecting a longwire to the 50 ohm connector on your radio will improve reception, but because of the mismatch between the antenna and the receiver, not all of the signal is transferred to the receiver. The LIM is an impedance matching transformer that overcomes this mismatch and improves signal transfer to the receiver.

If your receiver has high impedance terminals then it already contains an impedance matching circuit similar to the LIM's, however, using a LIM offers you greater flexibility with your antenna installation because it doesn't require you to connect the end of your longwire to the back of your receiver. The LIM can be mounted outside. Shielded cable brings the signal into the house and prevent household interference from getting into the radio.

Longwires and beverages are directional antennas. Using a LIM with coaxial cable allows you to orient the antenna in whatever direction you like. (Figure 1)

### Benefits

Using a LIM permits you to use 50 ohm coaxial lead-in cable which helps reduce noise pickup because of its shielding. A coaxial lead-in also permits you to locate your antenna away from the field of electrical noise generated by the electrical appliances and other devices like light dimmers in your house.

The LIM offers a measure of lightning protection for your receiver by providing a direct DC path between the antenna connection and the coaxial cable's shield. If the LIM is grounded, static charges from nearby thunderstorms will safely discharge to ground and protect your radio. This will not protect your equipment from a direct lightning strike and users should consider other measures to protect against a direct hit.

When grounded, the LIM will also bleed any static generated on the longwire by high winds and will safely shunt it to ground. Not only does this reduce noise (often heard as a popping sound) but it also reduces the probability of receiver damage from static buildup.

## Using the Longwire Impedance Matcher

Simply connect the LIM to your longwire antenna, and to the coaxial cable as shown in Figure 2. Note that the cable must have a PL-259 connector on the end to fit onto the LIM. That's it, there's nothing to adjust!

Most portable radios use a 3.5 mm antenna jack. A 3.5mm to UHF female adapter is available at most radio stores.

Inexpensive coaxial cable exhibits very low losses on HF frequencies. RG58AU is suitable for cable runs of 50feet or less. For runs up to 100 feet, we recommend RG8X. For runs over 100 feet we recommend RG8U or RG213.

When using a portable receiver with RG8X or RG8U cable, we recommend our AT100 cable with a PL258. This thin 3-foot cable assembly can be used to connect between your heavy coaxial cable and the radio and will reduce stress on the antenna connection of your radio.

For outdoor installations, we recommend the use of Coax-Seal on the PL connector. This will prevent the connector from taking on water and damaging your coax cable. Silicone and electrical tape are not recommended for sealing coax connectors.

If you require further assistance you can email us at [lim-support@durhamradio.com](mailto:lim-support@durhamradio.com) or you can call us on our support line at 905-665-5466.

## Warranty Information

Warranty is valid within North America only. If you have purchased this item outside of North America, please contact your supplier for warranty information.

Our LIM is made with the finest materials and has been designed to be weatherproof and tolerant to extreme temperatures. Under normal conditions the LIM should provide many years of reliable service.

The Longwire Impedance Matcher is warranted against manufacturer's defects for a period of one year from the date of purchase. If it fails to work within the first year you may return it to Durham Radio Sales & Service for replacement. Please include a copy of your sales receipt with your defective LIM. Warranty is limited to replacement of the LIM. The manufacturer cannot be held responsible for any damages which may result from the use of this product.

## Notes Regarding Product Returns

The LIM has been potted for maximum protection from the weather. There are no user serviceable parts inside. Do not attempt to open it as this will void the above warranties.

You are responsible for shipping charges for all product returns to Durham Radio. We will cover the shipping charges to return the item to you.

**Durham Radio Sales & Service Inc.**  
**1380 Hopkins St.**  
**Whitby, Ontario**  
**L1N2C3**

**Phone: 905-665-5466**  
**Fax: 905-665-5460**  
**email: [lim-support@durhamradio.com](mailto:lim-support@durhamradio.com)**

Figure 1a

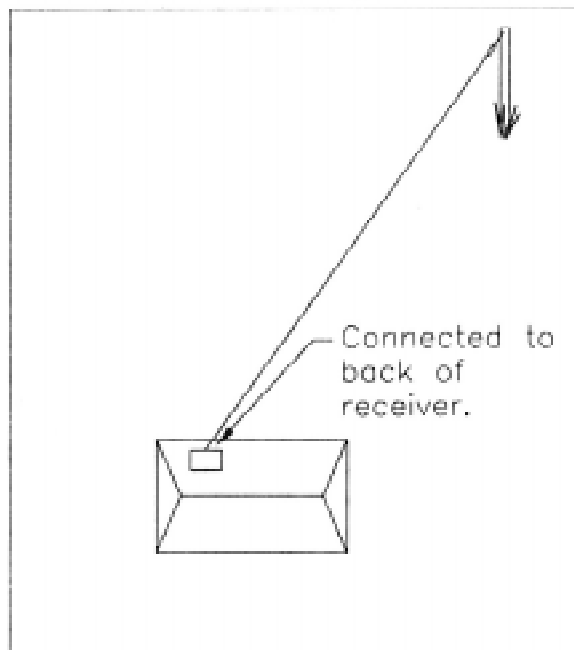
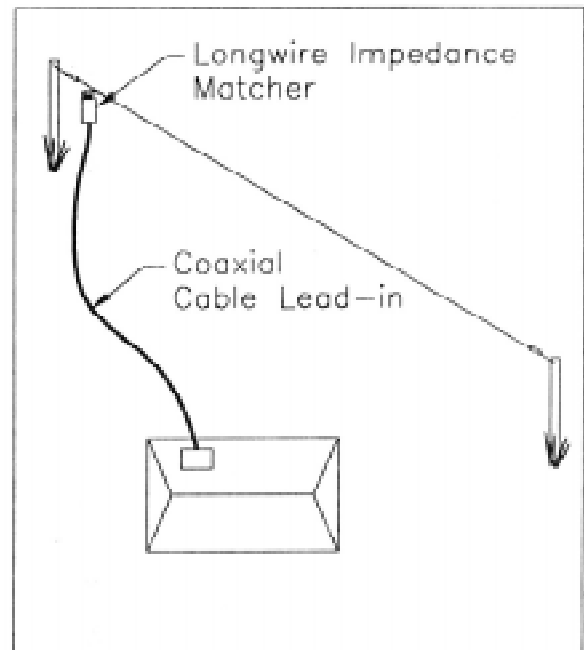


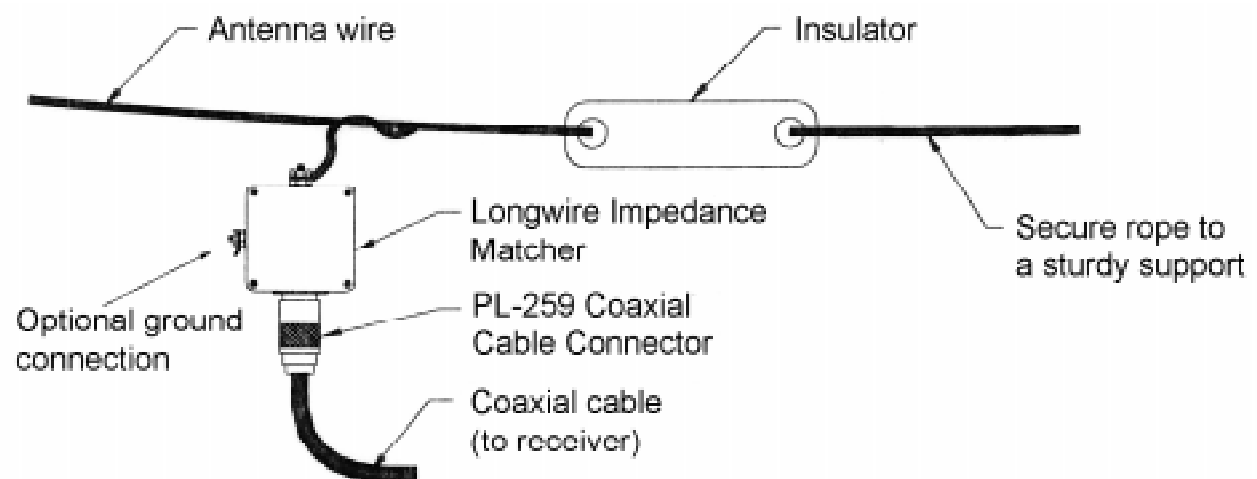
Figure 1a shows a longwire antenna run directly into the house. Since part of the antenna is actually inside, this arrangement is prone to picking up noise generated from household appliances.

Figure 1b



In Figure 1b a LIM has been connected to the end of the antenna. The longwire is now positioned away from the house and the antenna signal is fed to the radio via shielded coaxial cable.

Figure 2



**INSTALLATION NOTE:** Install the LIM so that it is suspended from the antenna wire, and not supporting the weight of the antenna. In some cases it may be necessary to secure the coaxial cable to your support rope to prevent stress on the coax connector.