

1:4 GUANELLA CURRENT BALUN

1:4 Guan Ella Current Balun.

Requiring a balun to feed a balanced feed line from an un-balanced T-Match tuner, a 1:4 Guanella Current balun design using two L15 ferrite toroid cores was selected among other balun types. An impedance transformation balun may be required due the variations in impedances often encounter with multi-band balanced antenna system. The balun may be required to sep up or down the feed impedance presented at the T-Match tuner to improve the matching range, it is for this reason that I chose to not include the balun as an integral feature of the T-Match tuner, opting for the flexibility of an outboard balun and the ability to trial various baluns subject to the antenna system and impedances presented.

The Guanella Current balun is a low loss, broadband balun that will ideally choke off common mode currents entering the radio room and importantly provide a transition from the un-balanced output of the T-Match tuner to the balanced antenna system feed line.

While using the balun to choke off common mode currents is best achieved at the antenna end of the feed line, this is not a practical arrangement for a balanced feed line system.

Construction

The 1:4 current balun is derived from two 1:1 current baluns with each consisting of a close double bifilar winding of 8 turns wound evenly spaced around the L15 ferrite toroid core. The toroidal cores are rapped in an overlapping layer pink heavy duty Teflon plumbers tape to protect the enamelled copper wire from insulation puncture from abrasion with the toroid core.

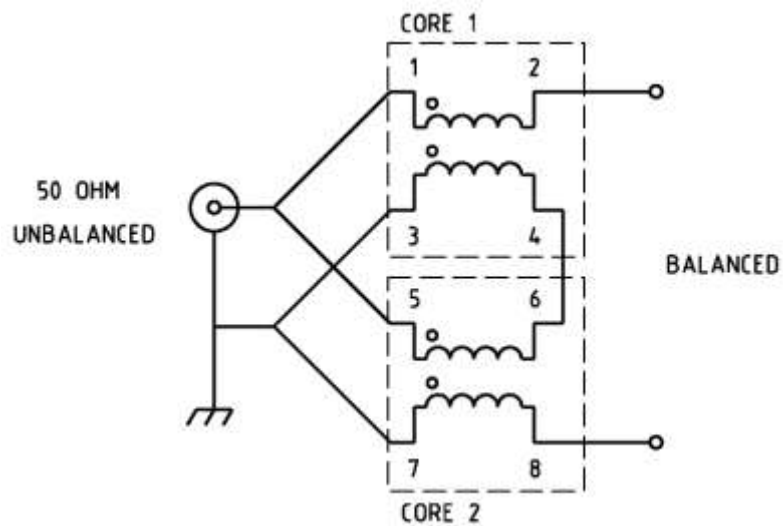


Figure 1 Schematic of the 1:4 Guanella Current balun.

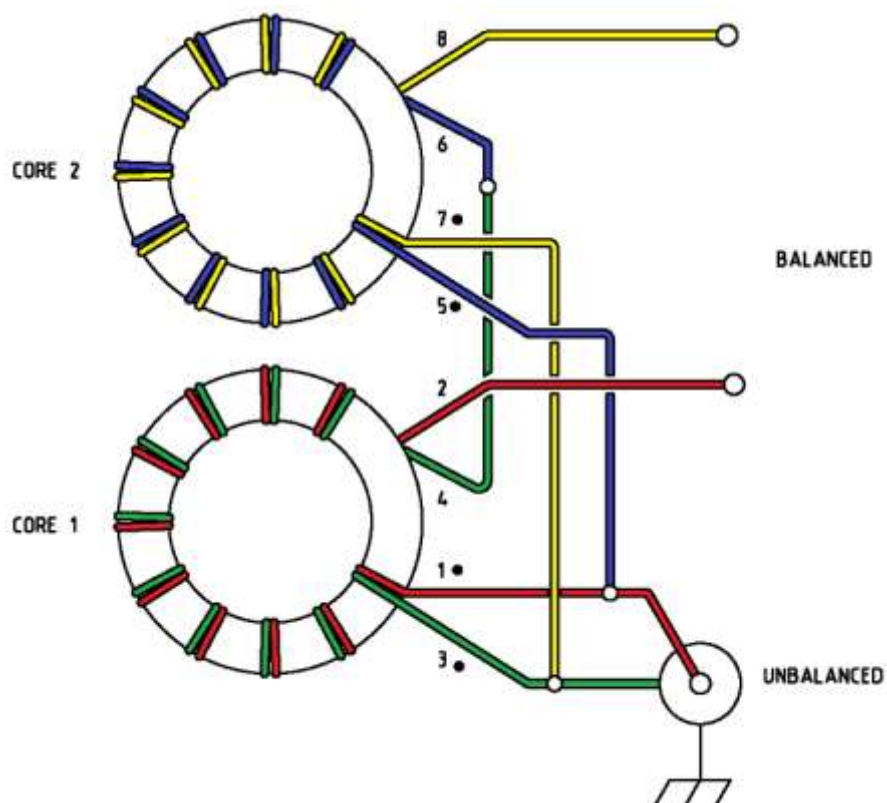


Figure 2 Wiring of the 1:4 Guanella Current balun.

Note this drawing shows winding connections and not the number of turns required. See article for details.

Parts list.

- 2 x L15 ferrite toroid core. [Jaycar](#) Cat. No. LO-1238
- Pink heavy duty Teflon plumbers tape.
- About 2 x 600mm of 1.25mm Enamelled copper wire.
- Two Gold Banana Socket Binding Post - Black. [Jaycar](#) Cat. No. PT-0431
- SO-239 UHF chassis mount connector
- Sealed Polycarbonate Enclosures 82 x 80 x 55mm from [Jaycar](#) Cat. No. HB-6230. See Fig 3 for details

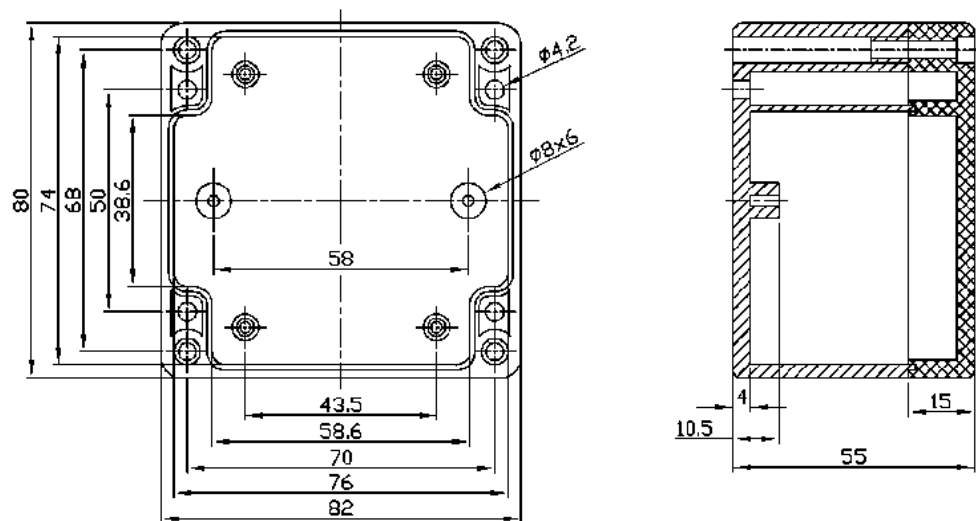


Figure 3 Sealed Polycarbonate Enclosures 82 x 80 x 55mm details. Designed to IP65 of IEC 529 and NEMA 4



Photo 1 1:4 Guanella current balun individual core windings assembled.



Photo 2 1:4 Guanella current balun individual core windings stack assembled.

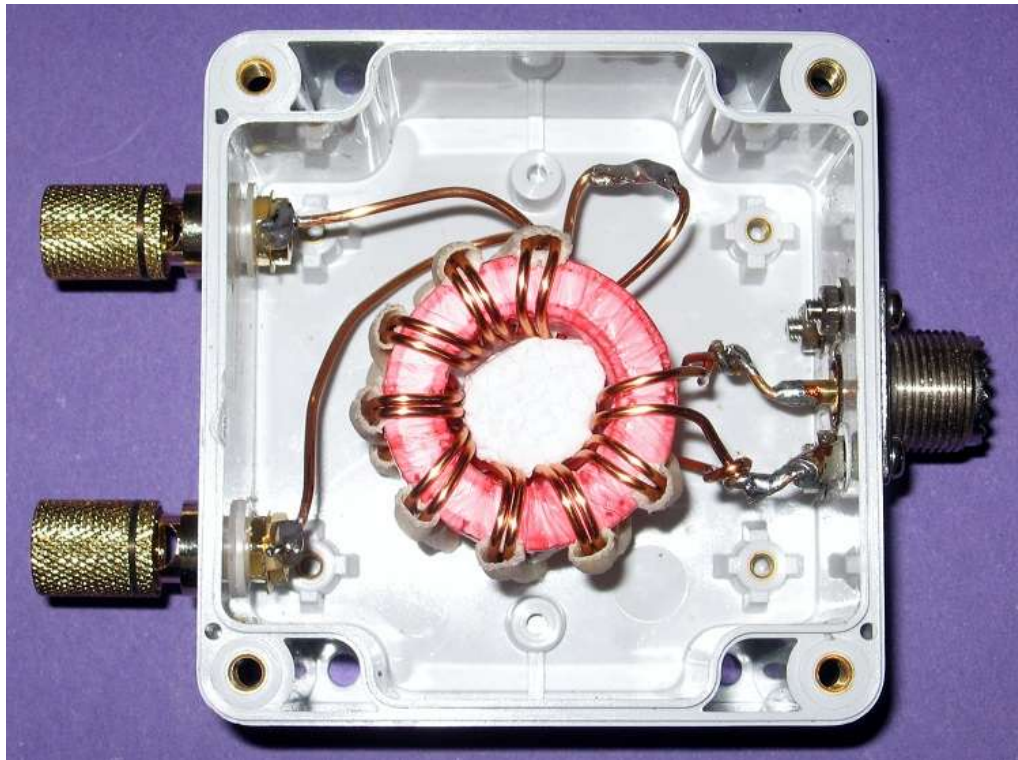


Photo 3 1:4 Guanella current balun assembled.