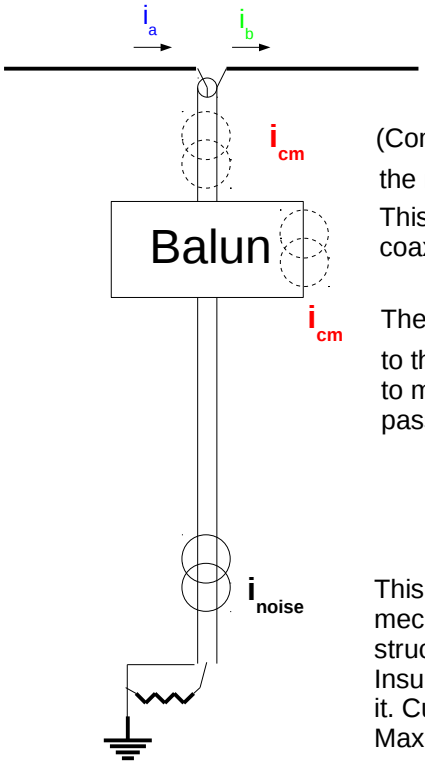

50 ohm termination
At receiver

(Common mode current) = the difference between the magnitudes of element currents i_a and i_b

This difference current has nowhere to go but down the coax to the receiver !! The coax shield does not stop it.

The balun presents a high impedance to this common mode current in order to minimize it while at the same time passing differential current.

This is unwanted (noise) current possibly produced from multiple mechanisms. It is on the outside of the coax and any supporting structure.It's generally not possible to eliminate it. Grounding or Insulating the shield or support may change it but will not eliminate it. Current flows much the same way it does on any antenna with Maxima and minima along its length.