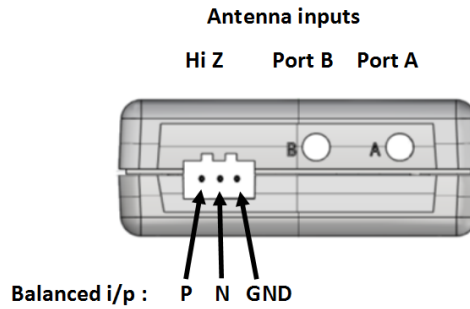


## RSP2 – Guide to using the High Z Port



### Background information

Ports A and B are intended as general purpose RF ports, but the Hi-Z port is really intended as the prime port for HF and below and has been optimised as such. This is one of the major changes in thinking from the RSP1. The reasoning here is that you seldom get a single antenna that gives optimised performance from VLF to UHF, and so the majority of people will tend to use separate antennas for HF and VHF/UHF. We chose a 1 K ohm impedance for this port, to simplify the connection to a random wire antenna which is the antenna of choice for HF for many of our customers and is also a good choice for frequencies below 1 MHz. Because of the long wavelengths involved at HF, this port also works well for 50 ohm antennas as long as the feed cable is not excessively long, but for long feed cables, you can simply use a reverse 9:1 balun between the Hi-Z input and the end of the feed cable to achieve an adequate match to 50 ohms for this purpose. When operating below 1 MHz (down to VLF), though, the direct connection will work best, even with a 50 ohm feed as the high impedance termination will deliver the highest terminal voltage at the input to the RSP2 and reflections will really not be a problem because the wavelength is so long.

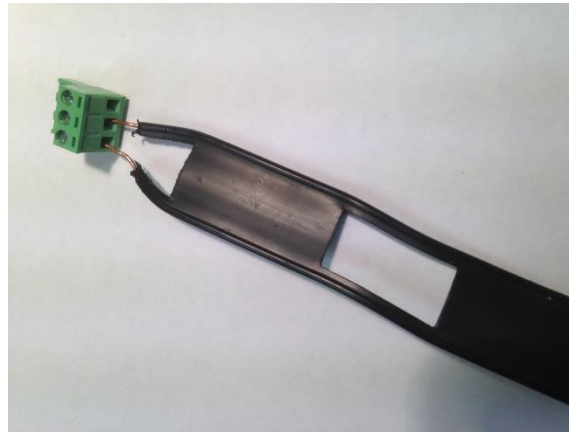
### Practical connection options

In summary, the 'High-Z' port is ideal for operation from 1kHz to 30 MHz and has been designed to have an input impedance of  $1k\Omega$

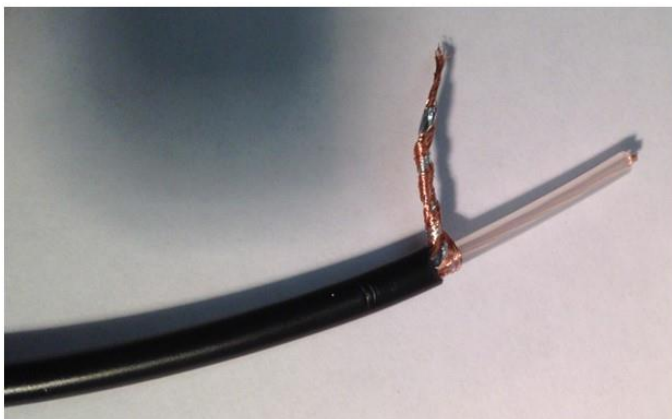
This is ideal for connecting a longwire antenna directly to the P terminal and a grounding arrangement to the N and GND terminals (see below):



A balanced ladder line feeder (typically 450 ohms) will also be very effective when connected across the P and N terminals (see below):



Also, in practice a short length of coax can be terminated directly to the outer terminal connections of the supplied CTB9208/3 plug, without significant loss of signal. Losses due to mismatch are small if the length of the coax is kept well below  $\frac{1}{4}$  wavelength at the frequency of interest.



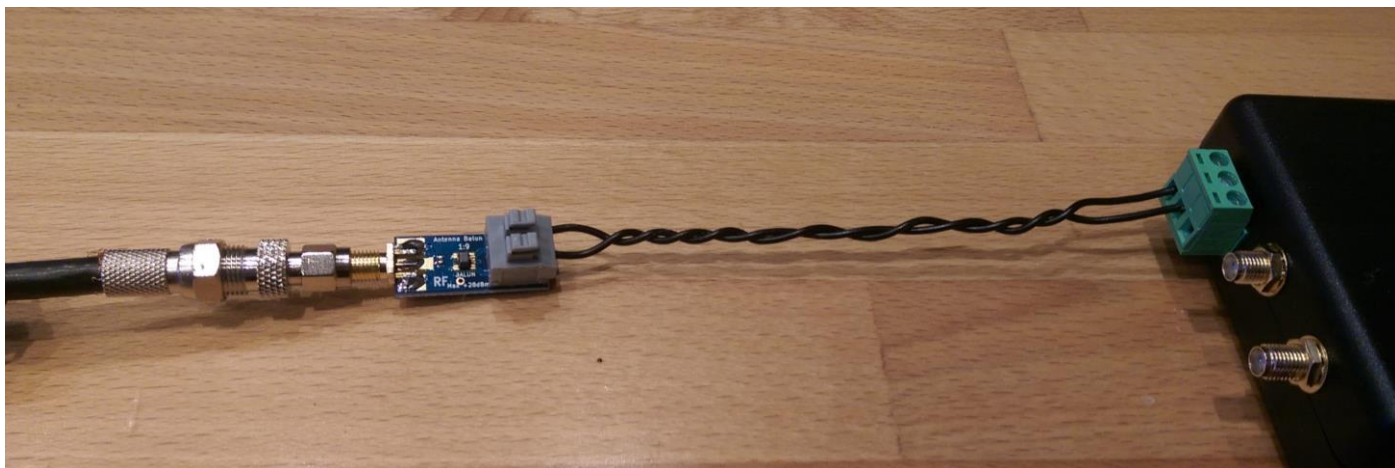
**Connect the coax inner to the P terminal and the outer to the N and GND terminals as in this example which is using a short length of RG58**



The short length of coax can be terminated with a suitable flying socket (e.g. BNC for use with active loop antennas or SO239 for connection to other existing LF antenna choices).

If terminating the short length of coax with a flying BNC socket presents difficulties, one solution is to buy a short cable or 'pigtail' with the desired socket at one end and to cut off the unwanted plug. The coax can then be connected direct to the green plug.

For connecting to longer lengths of coax, adding a low cost 9:1 balun (such as the [Nooelec balun](#) shown below ) will produce very good results and improved SNR:



For information concerning how to select a specific antenna port, we recommend watching this YouTube video: <https://youtu.be/YAtT97Ash8E>

As well as the core SDRplay team, the thriving Facebook Group <https://www.facebook.com/groups/sdrplay/> and SDRplay forum on <http://www.sdrplay.com/community/> are ideal places for getting help, tips and sharing ideas on your particular requirements.