

## Intercom Notes

Ruscool Electronics Ltd

The file about 2 intercoms (Ver2) has some details about how to connect the audio cables between the units to prevent hum loops. (this is a fairly common procedure in the internals of audio systems) For best results, you should power the intercoms with a nice smooth 12 Volts DC. My preference is a separate transformer type regulated 12 Volts power supply, because many switch-mode type power supplies tend to have quite a bit of hum or hash on them, and that's not nice to listen to.

Our intercoms are not normally supplied with microphone and headphone sockets, but we are normally able to supply aviation microphone sockets, and stereo headphone sockets, and indeed we have recently supplied some special Helicopter Headset sockets because they have the microphone and headphones on the same plug.

All connections to our intercom boards are via screw terminals.

The microphone input circuitry is suitable for most microphones, and can even be readily configured for very low impedance microphones as used in some military and vintage headsets. (or Oxygen masks)

There are onboard adjustments for the gain of the microphone, and the level of the "side-tone" (so you can hear yourself talking). There are also volume adjustments for the audio signals coming from the PC, and because we can drive stereo headphones, you can hear cockpit / engine sounds coming from the correct left or right location. There is a master volume control fitted on a short cable to enable you to fit it into your panel as required.

There are several modes of operation for the intercoms, and there are two pairs of terminals which control the outgoing audio. These are logic levels only, so you can fit remote buttons and switches, because there is no audio signals on these wires :

1. One set of terminals allows you to connect a 'Push to Talk' button so that the other pilot can hear you only while you hold the button down, or you can just put a small wire link between the two terminals and you can be heard all the time. (Open Microphone)
2. The other pair of terminals allows you to connect an 'Enable' switch to enable or disable the audio going to the Flight Simulator PC. If you want audio to go the Flight Simulator PC all the time, just put a small wire link between the two terminals.

3. Another option is to connect the system so that you have an Open Microphone (as in 1 above) and then use a 'Push to Talk' button on the Enable terminals. This means that the pilots can hear each other all the time, but the push to talk button controls what goes out to the Flight Simulator PC. (e.g. as a radio call etc)

4. If you use a double pole pushbutton, (one pole connected to the 'Push to Talk' terminals, and the other pole connected to the 'Enable' terminals) you can effectively have a push to talk button so that the other pilot can only hear you whilst the button is depressed, and also your voice only goes out to the Flight Simulator PC while the button is down. This is very much like the radio microphone control used in most light aircraft.

#### Intercom Setup:

The system trimpots are normally set about midway during our testing, but depending on your particular microphones and headphones, they may need to be altered to suit. Here are ideas as a starting point for your own setup :

#### Captain's Intercom:

Set main volume control (the one on the short cable) at midway.

Press the PTT button (or link the two terminals together if you don't have a button connected). Do not have the F/O's intercom's PTT button pressed.

Set the Mic Gain trimpot so that the First Officer hears you at a normal listening volume in their headphones.

Adjust the Sidetone Volume trimpot so that you can "just" hear yourself in your own headphones.

#### First Officer's Intercom:

Set main volume control (the one on the short cable) at midway.

Press the PTT button (or link the two terminals together if you don't have a button connected). Do not have the Captain's intercom's PTT button pressed.

Set the Mic Gain trimpot so that the Captain hears you at a normal listening volume in their headphones.

Adjust the Sidetone Volume trimpot so that you can "just" hear yourself in your own headphones.

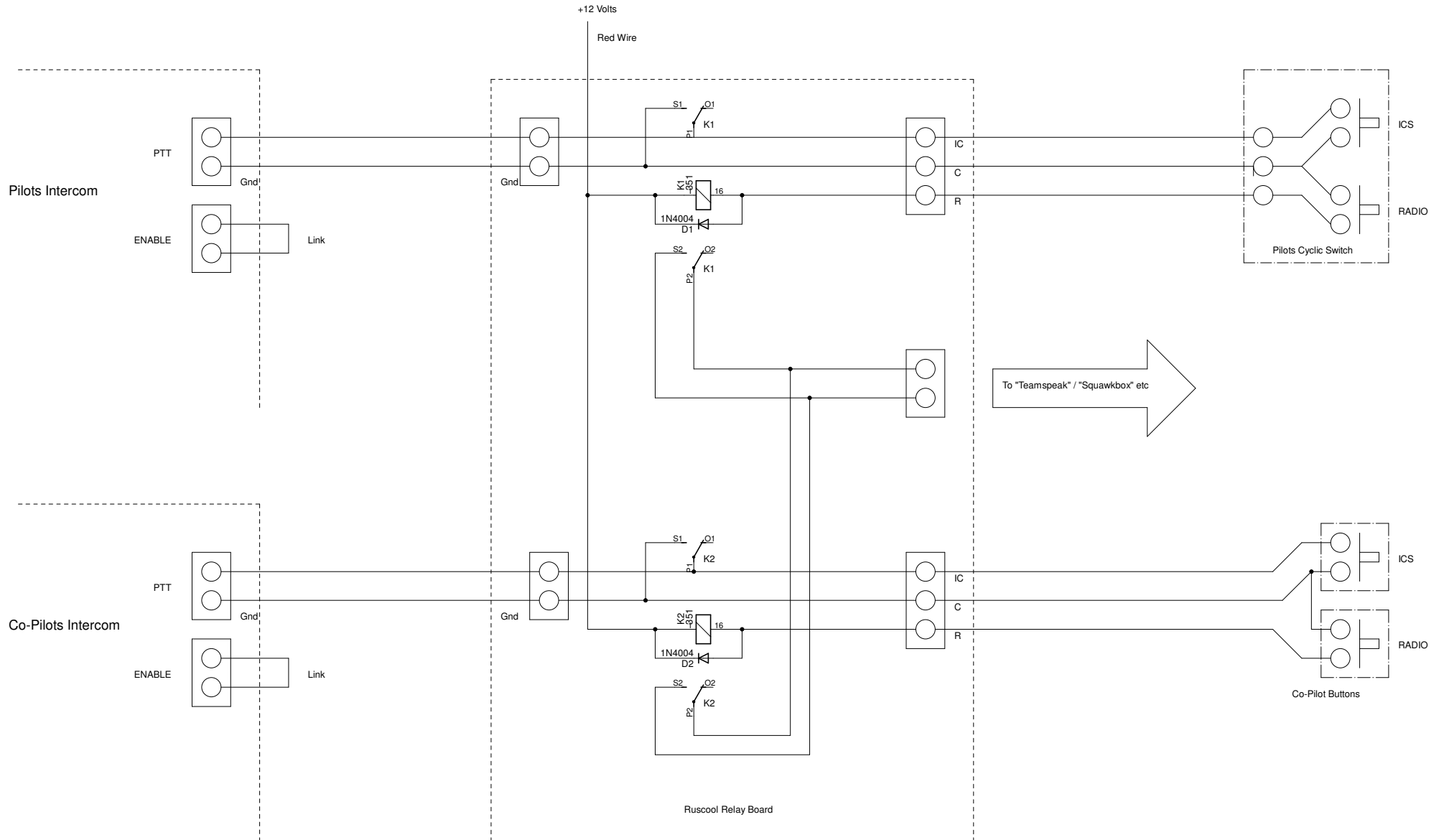
# Intercom Modes

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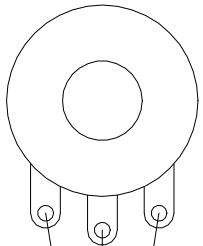
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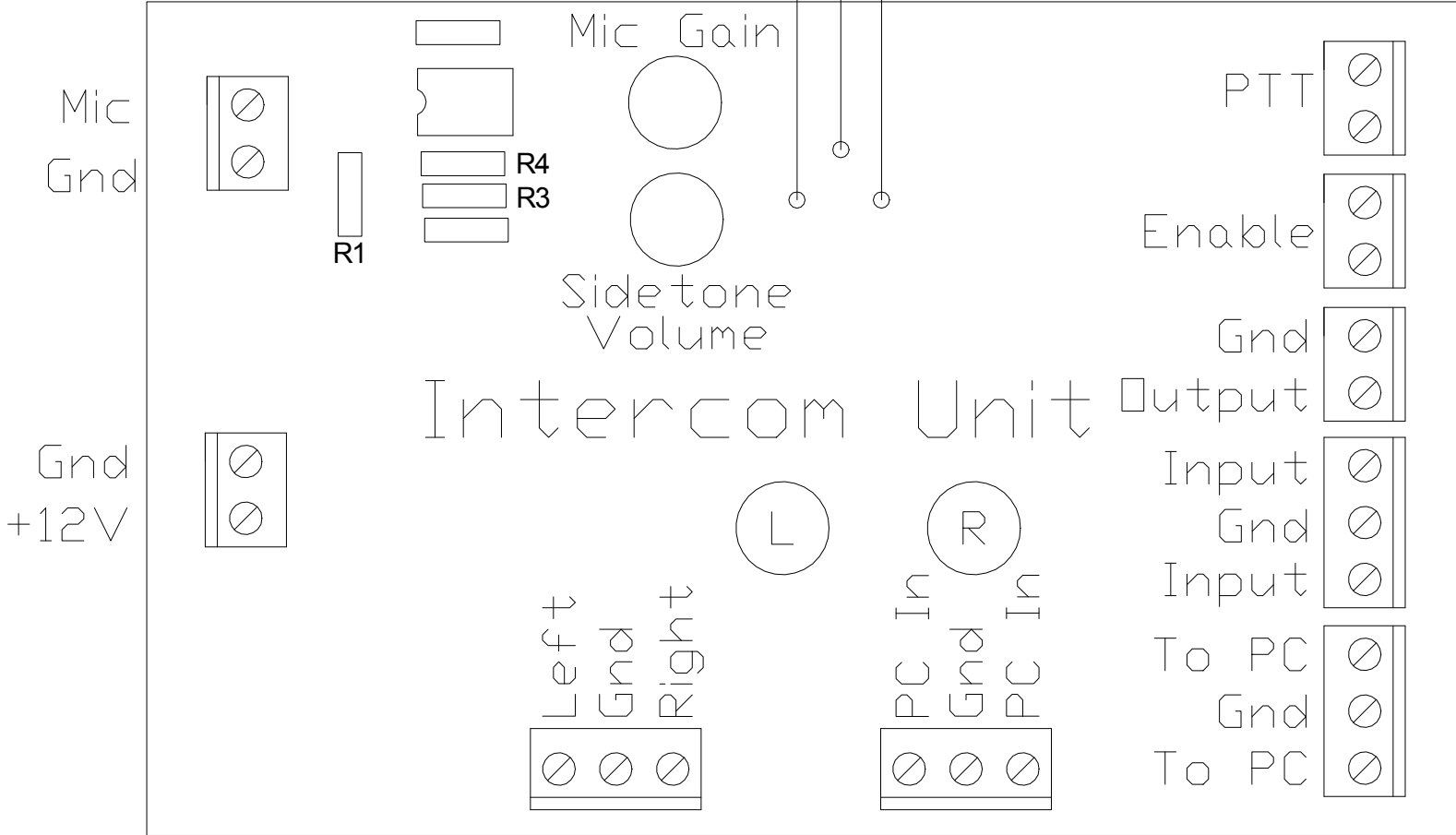
Intercom Connections for Teamspeak / Squawkbox



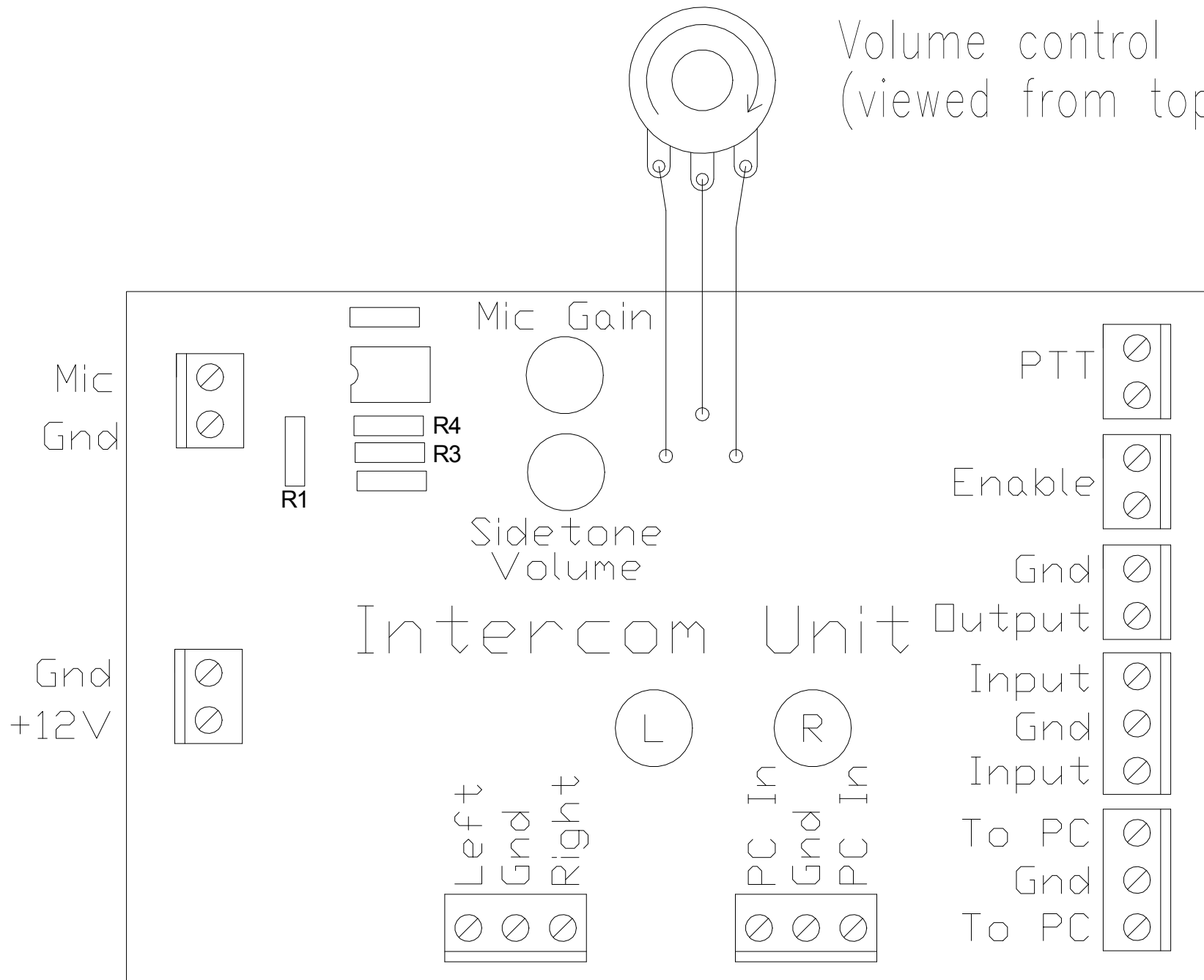
RESISTOR CONFIGURATION	
Electret Mic	Dynamic Mic
R1 = 22K	R1 = Not Fitted
R4 = 39K (or 47K)	R4 = Not Fitted
R3 = Not fitted	R3 = 680K



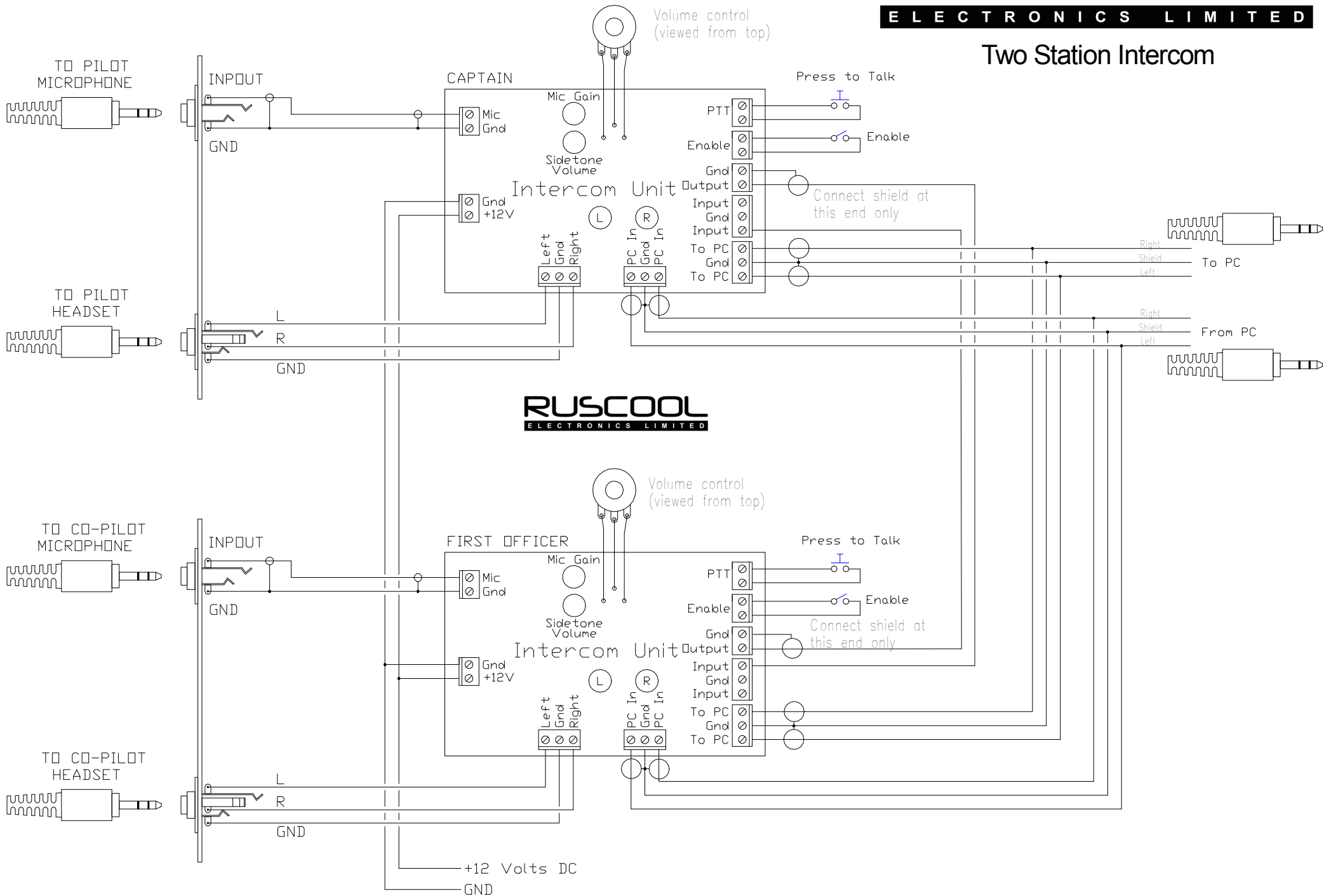
Volume control  
(viewed from top)



Volume control  
(viewed from top)



## Two Station Intercom



## Three Station Intercom

