



**ELECTRON GUN VOLTAGE:**  
 The triode and its associated circuitry controls the voltage across the electron gun. The more voltage there is across the triode, the less there is across the electron gun and vice versa.  
 The voltage across the e-gun is fed to the triode control circuit via the voltage divider.  
 If the emission current of the e-gun is increased (by increasing the filament current), then the voltage across the triode will decrease. This will cause the triode to be turned on harder to compensate -i.e. the voltage across the triode will decrease thus restoring the voltage across the e-gun to the pre-set voltage.

**ELECTRON GUN CURRENT:**  
 The e-gun current is proportional to the filament current. The hotter the filament, the more emission current.  
 The filament current is controlled by a combination of the Emission board, the SCR driver board and the SCR board.  
 On powering up the EHV rack, there will be zero filament current. With the emission current set to zero, when the Filament On button is pressed the SCR driver/SCR boards alone will control the filament current. The current is stabilised by feedback from the SCR board to the SCR driver and is set by the controls on the SCR driver.  
 When the HV is switched on, the Emission board is connected to an input of the SCR driver and this input is then used to control the emission current. This current is stabilised by feedback to the Emission board via transducers which monitor the current in the HV lead going to the Red Box.

Any comments on this diagram: please email Colin@Highland-Scientific.com

Drawn by Colin Hinson for Highland Scientific ©2012		
Title Block diagram of EHV voltage and current control		
Size C	Document Number	Rev A
Date Monday, January 06, 2012	Sheet 1	of 1