

Application Note 44. Using Rail-Demux to control ITV style valves and solenoids.

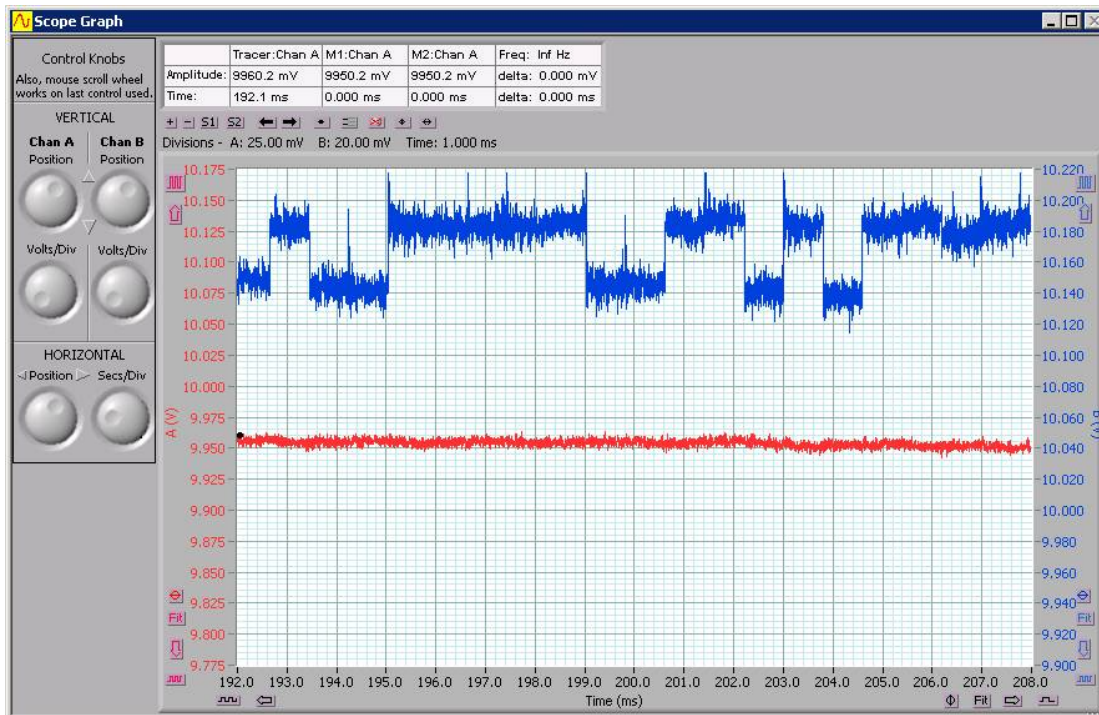
The ITV1000/2000/3000 valves use an analogue (0-10V) input to control flow. The Rail-Demux can be used to provide DMX512 remote control to these devices. However the following should be considered:

The ITV valves are very responsive to control input voltage change and have a tendency to hunt in an attempt to follow these changes. The Rail-Demux has an output stability of better than 0.5bits which is approximately 0.02V. However there will also be a voltage ripple of approximately 0.01V on the output.

This is not a fault and is totally invisible when controlling lighting equipment. However it is enough to cause the ITV valves to hunt and will eventually cause their premature failure.

The DC ripple voltage can be filtered out using a simple RC circuit at each output. Keeping in mind that the ITV valves have an input impedance of 6K, the required RC circuit consists of a 100R resistor connected to the output and then a 100uF capacitor connected to ground. The ITV valve control connection is then attached to the junction between the resistor and the capacitor.

The oscilloscope view below shows the results. The blue trace is an unmodified output with a 1 bit change in level running. The DC ripple can be seen superimposed on both the high and low parts of the waveform. The red trace is a modified output showing vastly reduced DC ripple.



There are two side effects to this modification:

1. The total output level is reduced to 9.95V.

- The response to fast changing DMX levels is slowed. Generally this is not a significant issue for valve automation.

The graph below shows the change. The blue trace represents a change of DMX512 channel input and the red trace a modified output.

It can be seen that a delay of some 100mS is introduced.

