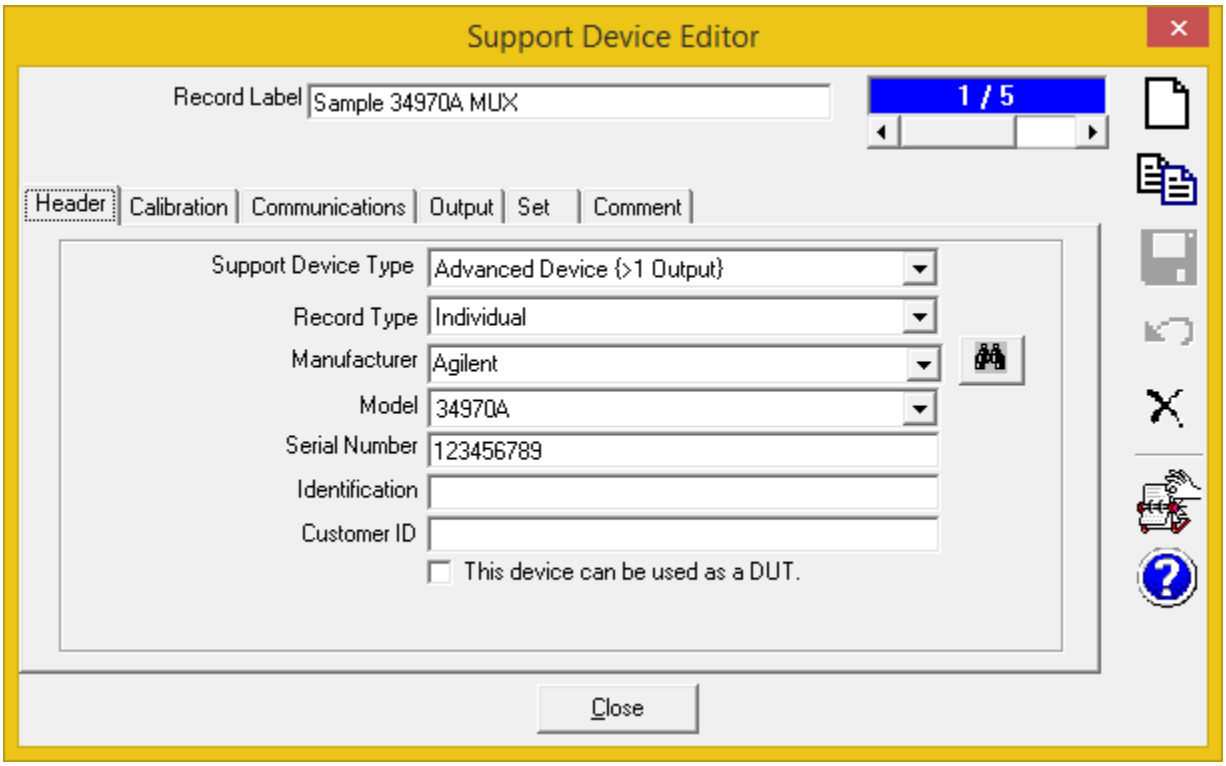
Agilent 34970A Multiplexor Setup Using its Internal DMM to Read Volts

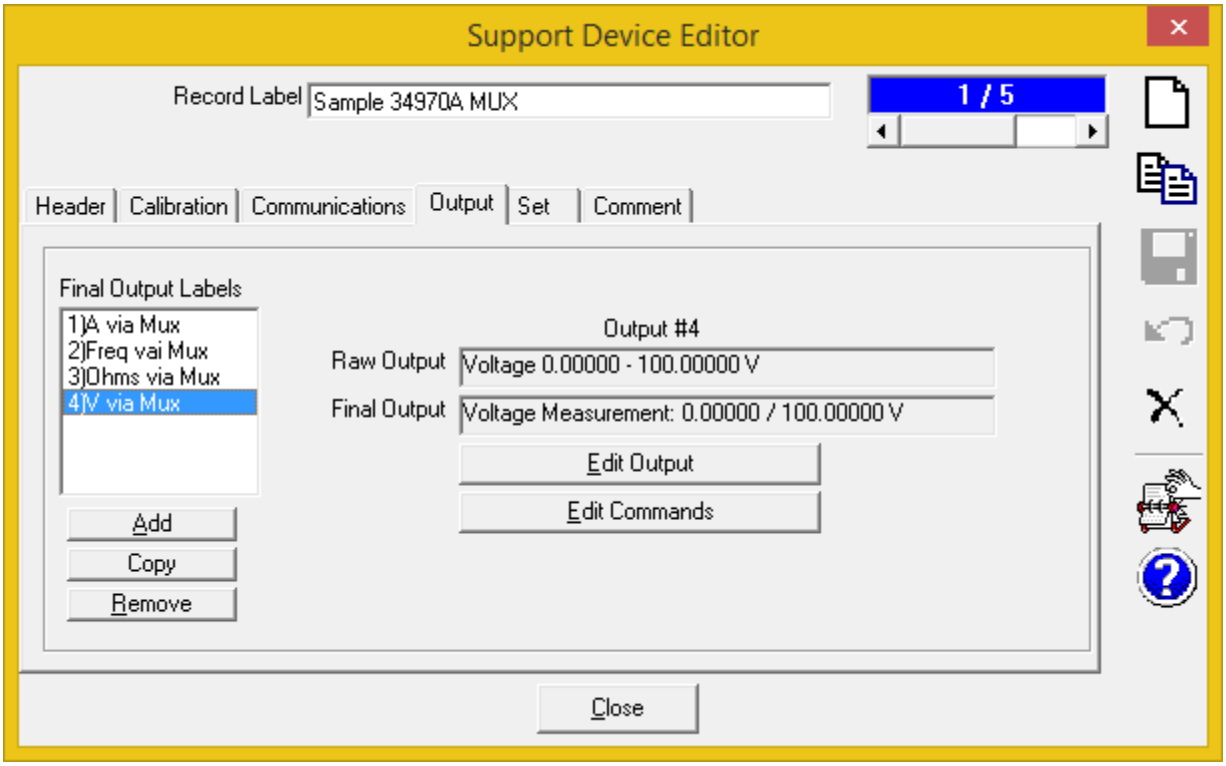
This is from the Example 34970A Support Device that is already in the COMPASS for Pressure new install database as an example. If you don't already see this in your database as a Support Device then you can get it from the hidden example database. See the COMPASS help file for instructions on how to search for, and use, example setups. Also this web page, http://us.flukecal.com/literature/software-downloads/software/compass-example-set-database

15-August-2016 - Added additional output to **Read Voltage from a Power Supply** on a specific channel. See blue screen-shots starting on page 11 for this feature.



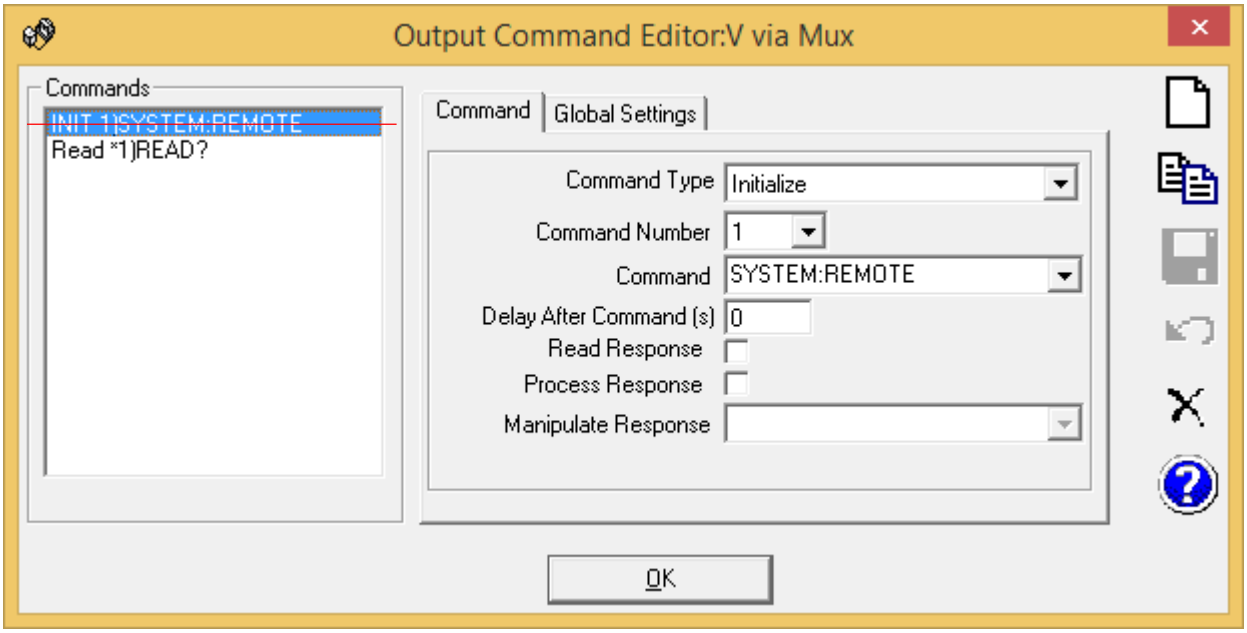
This example is for volts but the other outputs; amps, frequency and ohms are setup in the same way.

In the 34970A Support Device setup, go to the **Output** Tab, select the "V via Mux" output then click the [Edit Commands] Button.

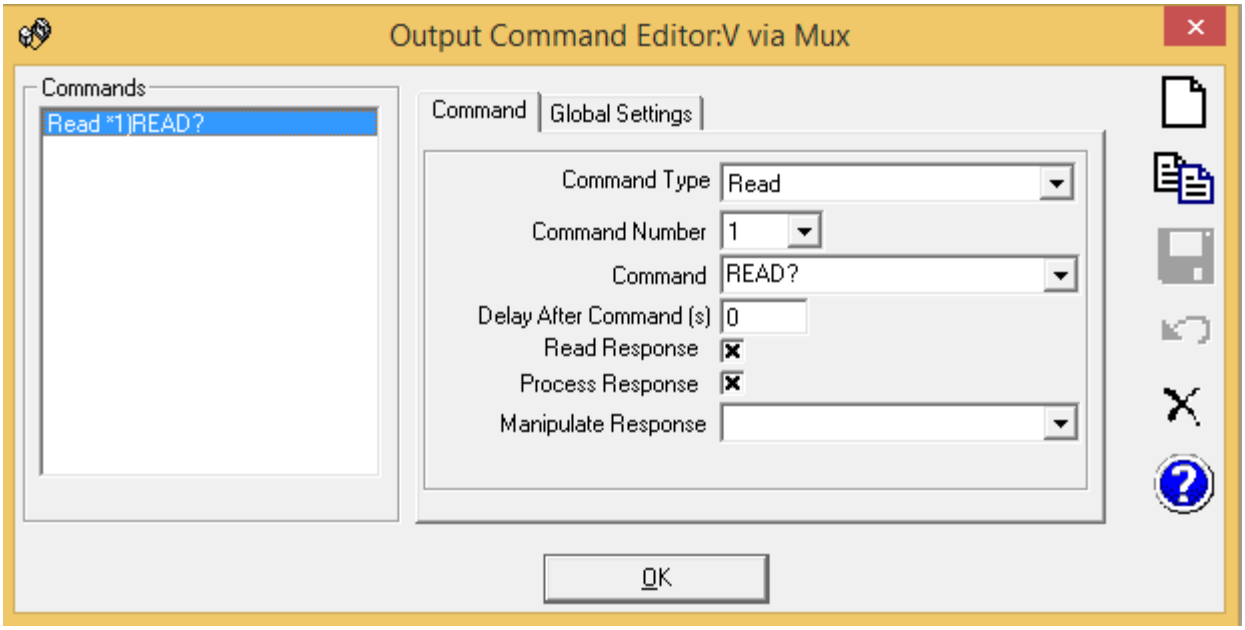


If the setup has a SYSTEM:REMOTE command as an initialization command for the READ? command the multiplexor will not switch channels. Press the X above the blue/white question mark to delete this command if it is there.

Output Tab, [Edit Commands] Button, Initialize Command

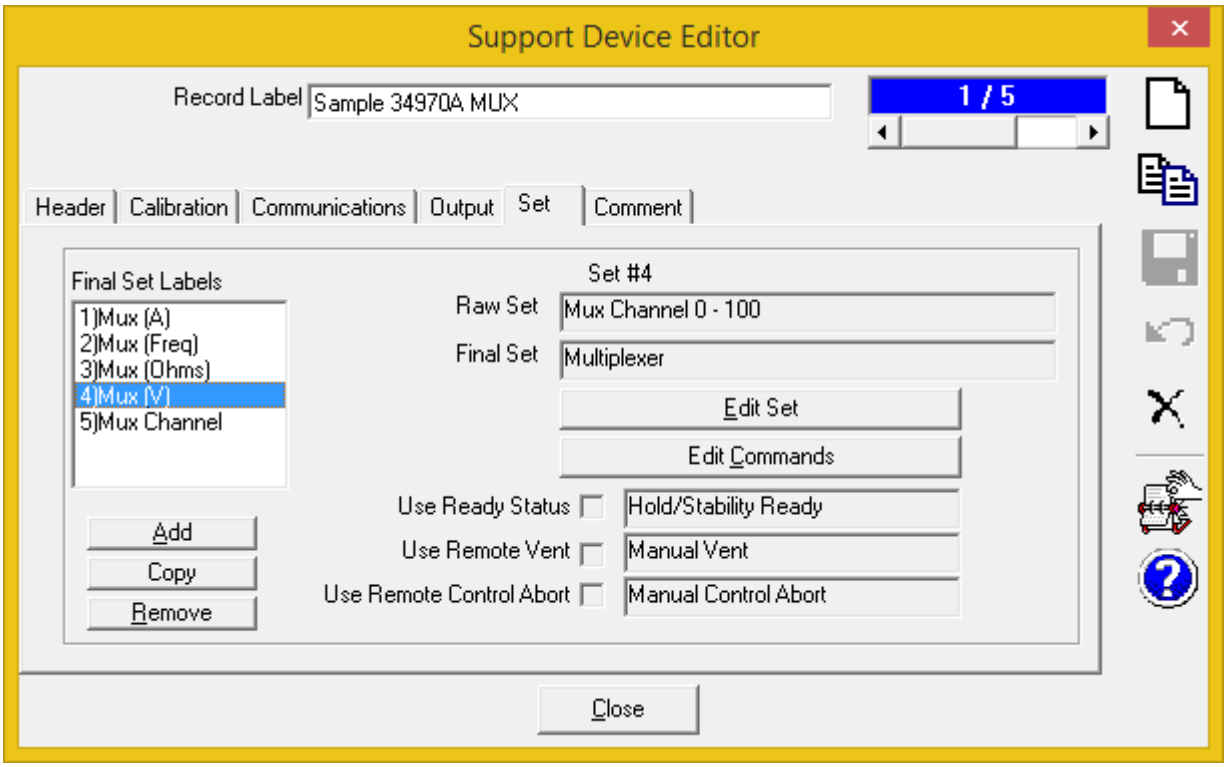


Output Tab, [Edit Commands] Button, Read Command. Should look like this.



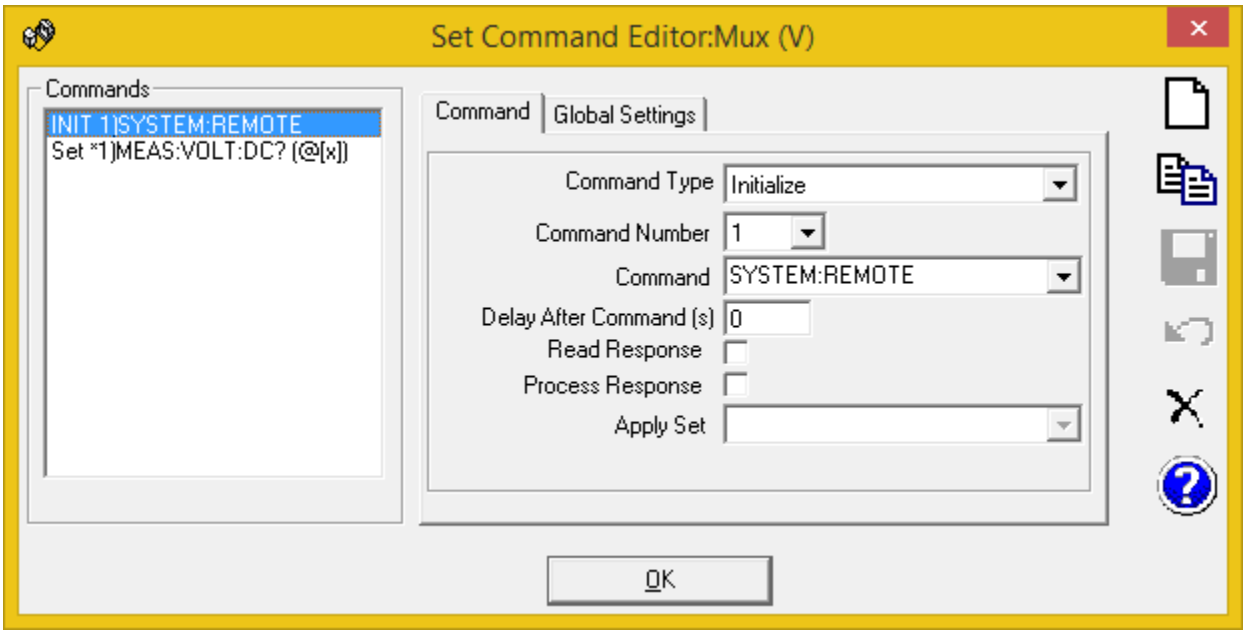
Save any changes by pressing the disk icon, then press the [OK] button to close this window.

Go to the **Set** Tab, select the “Mux (V)” output then click the [Edit Commands] Button.



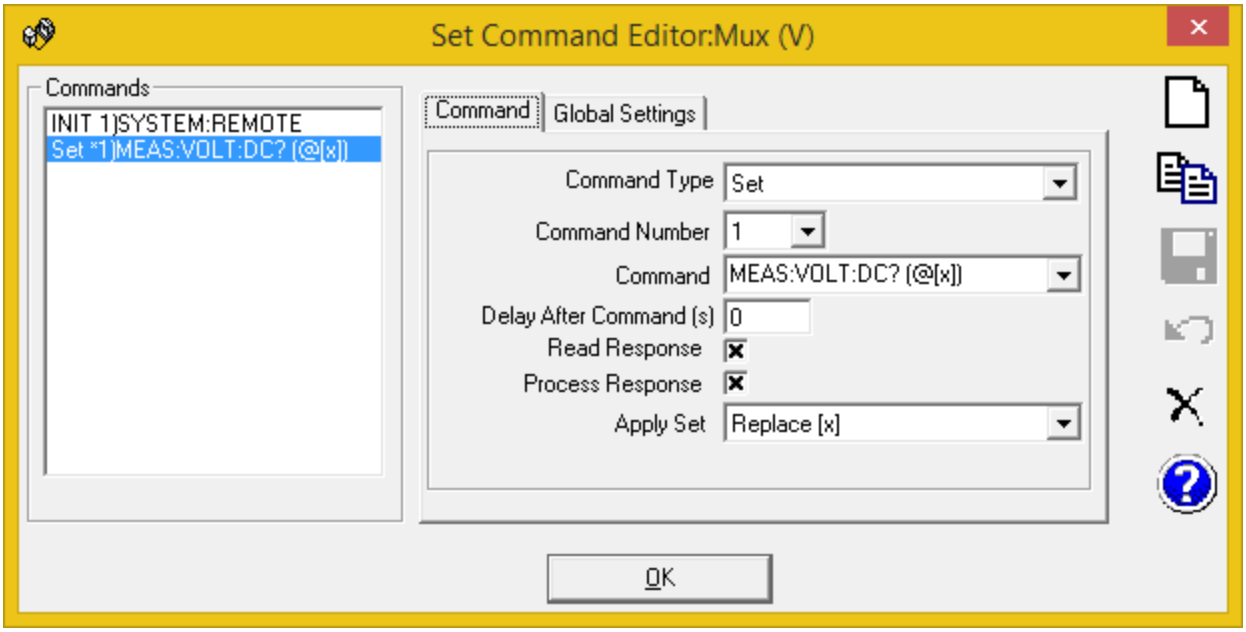
Set Tab, [Edit Commands] Button, Initialize Command, for Mux(v)

If using IEEE don't use SYSTEM:REMOTE command because it will give ERROR 514 on the 34970A. Press the X above the blue/white question mark to delete this command if it is there. If using RS232 leave the initialization command.



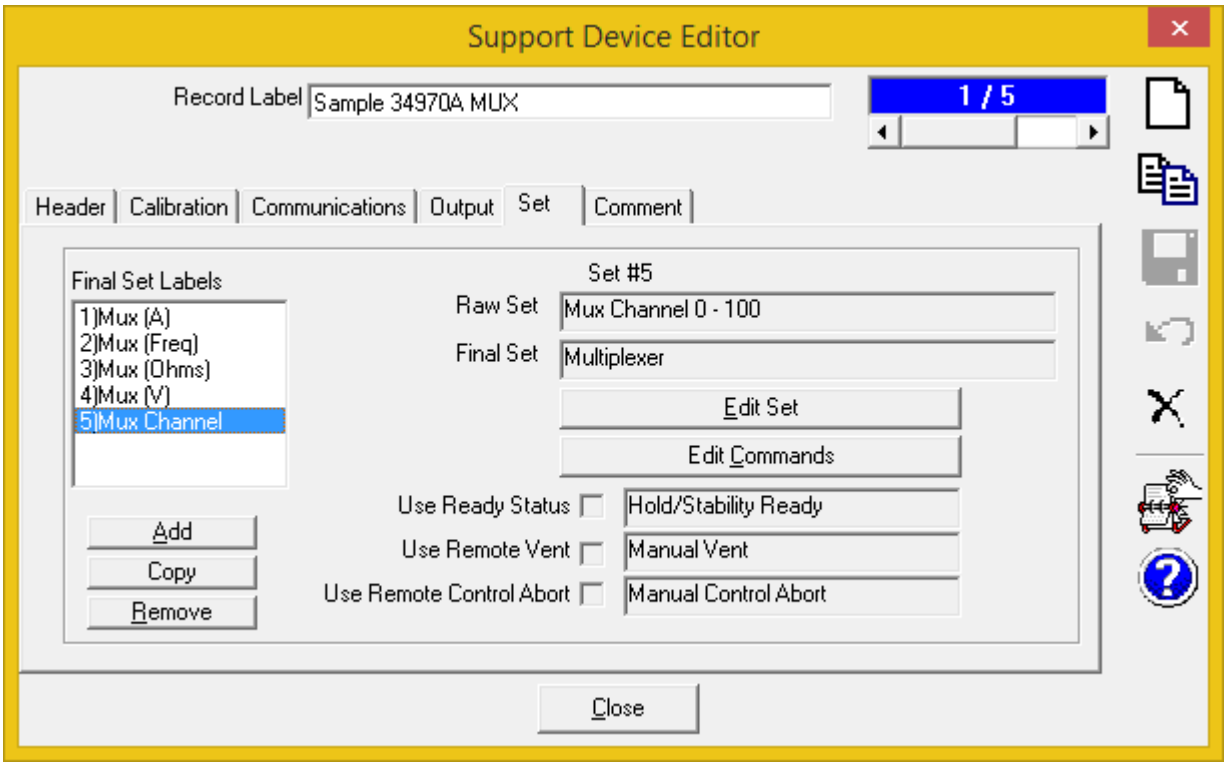
Set Tab, [Edit Commands] Button, Set Command, for MUX(v)

The (@[x]) text will be replaced by the multiplexor channel number when COMPASS sends this command to the 34970A. The MEAS:VOLT:DC? command is both a read and set command. It sets the DMM to volts DC, sets the channel per the specified channel during test initialization and measures the voltage. The READ? command in the Output tab is used by COMPASS to read the voltage value for the DUT.

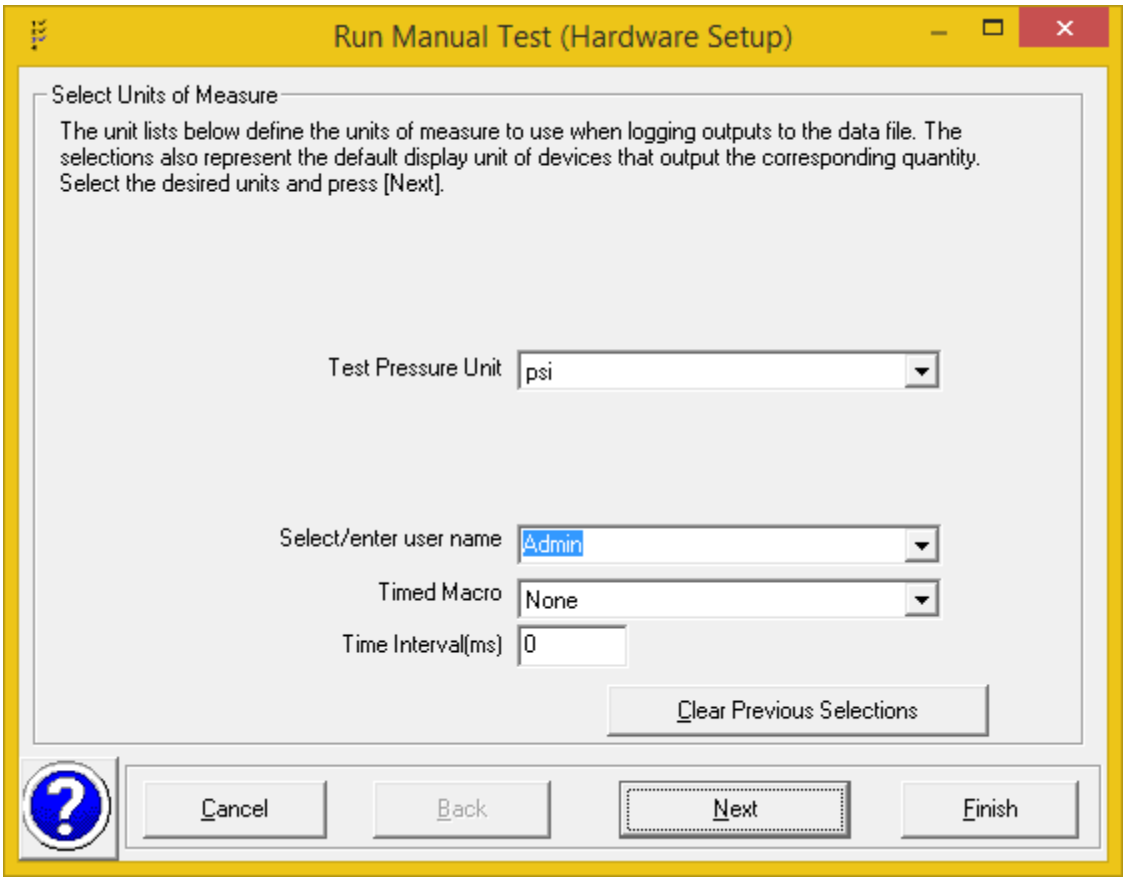


Save any changes by pressing the disk icon, then press the [OK] button to close this window.

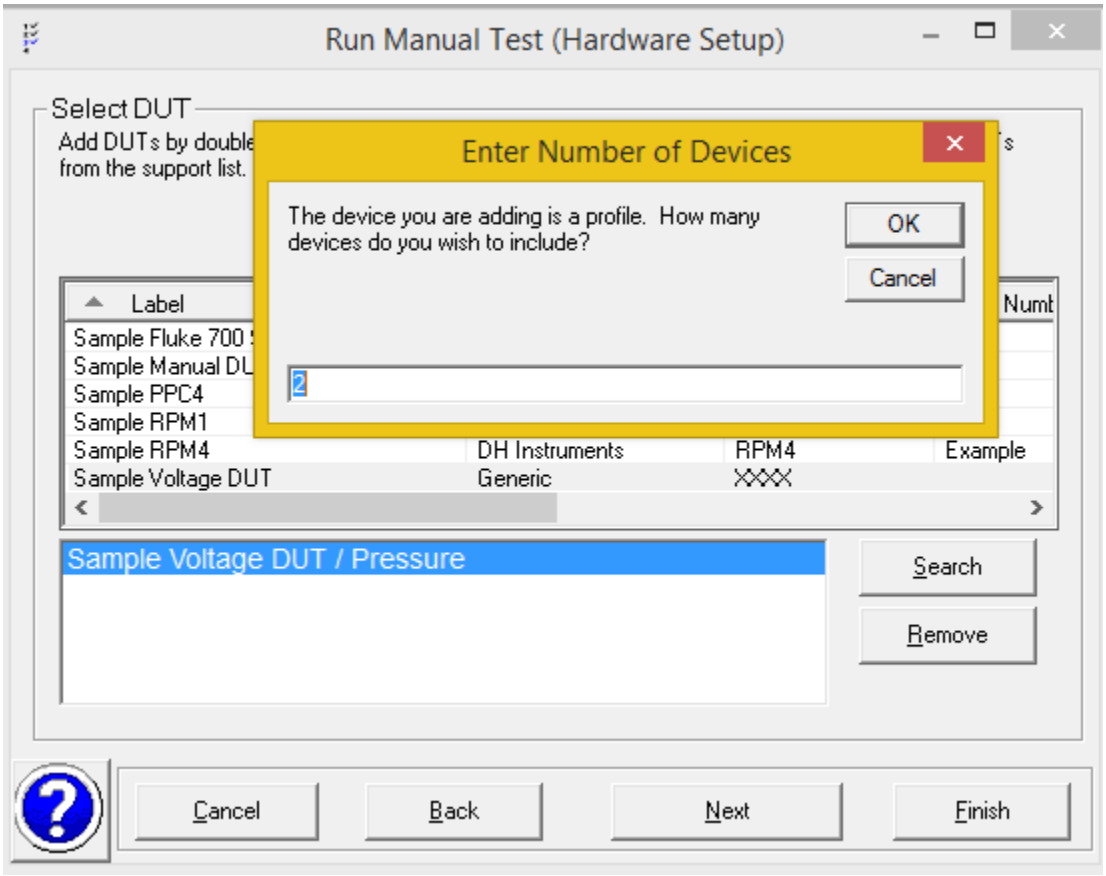
Set Tab, The “Mux Channel” output is typically used when the 34970A will be used as a multiplexor only and the internal DMM will not be used. An example would be to use the 34970A to use an external DMM to read voltage on the multiple channels of the 34970A. “Mux Channel” is not used in this example.



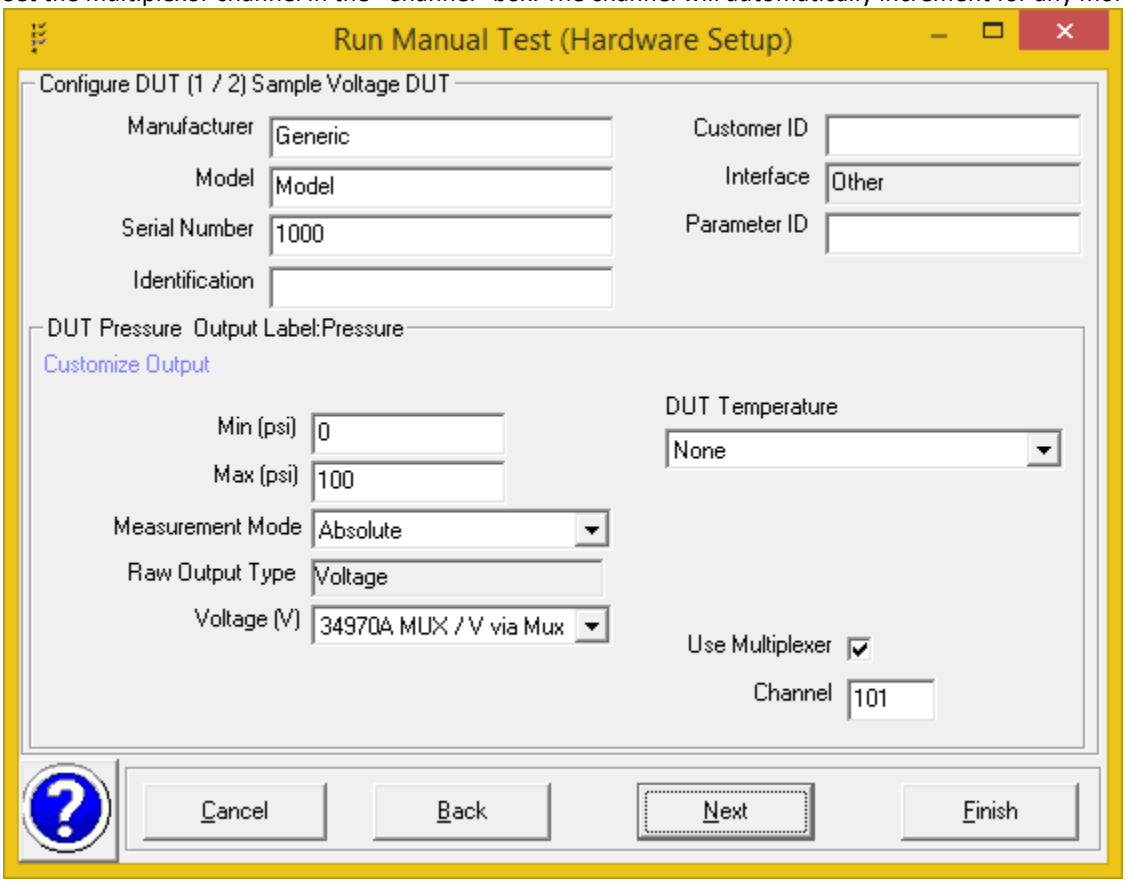
Now run a manual test to check if it’s working by this menu path;. [Run],<Run Manual Test>.



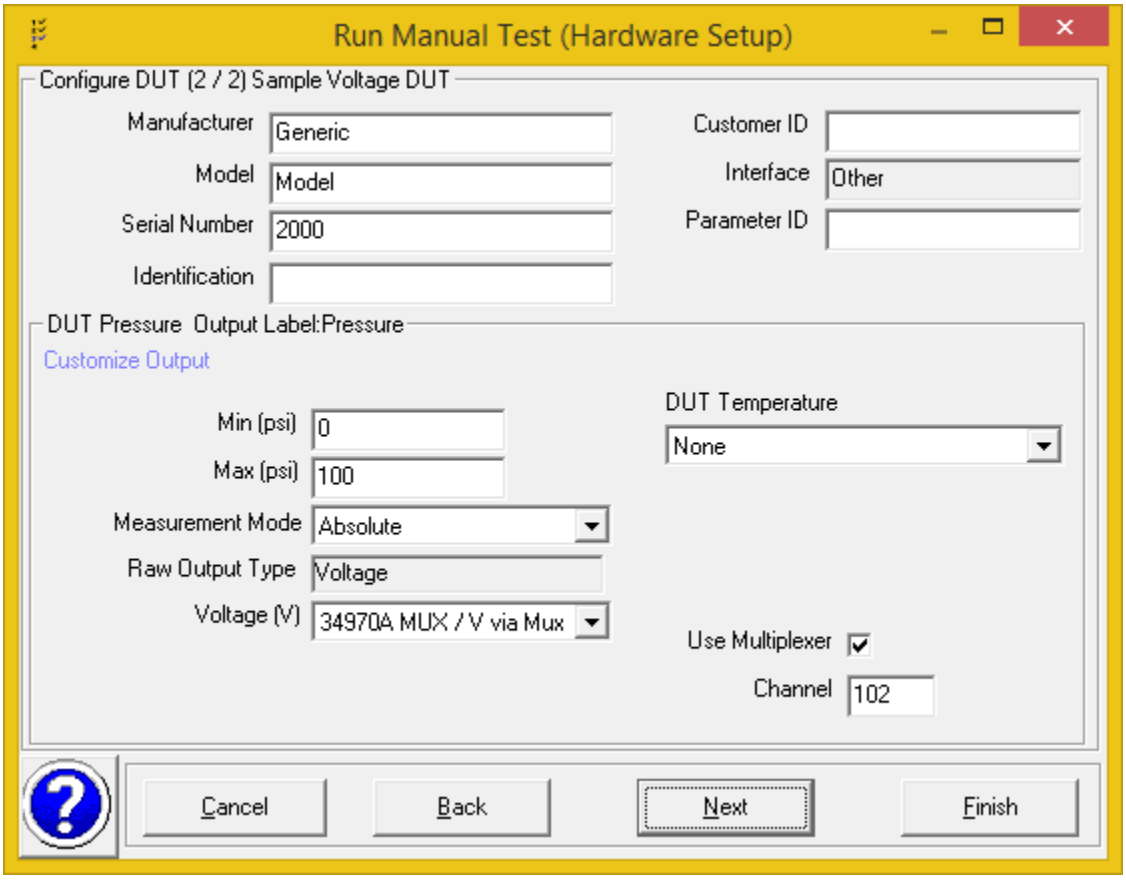
Two identical DUTs are chosen for this example. Choose more than one of the same DUT by double-clicking it again. COMPASS will ask you how many of them you want in the test.



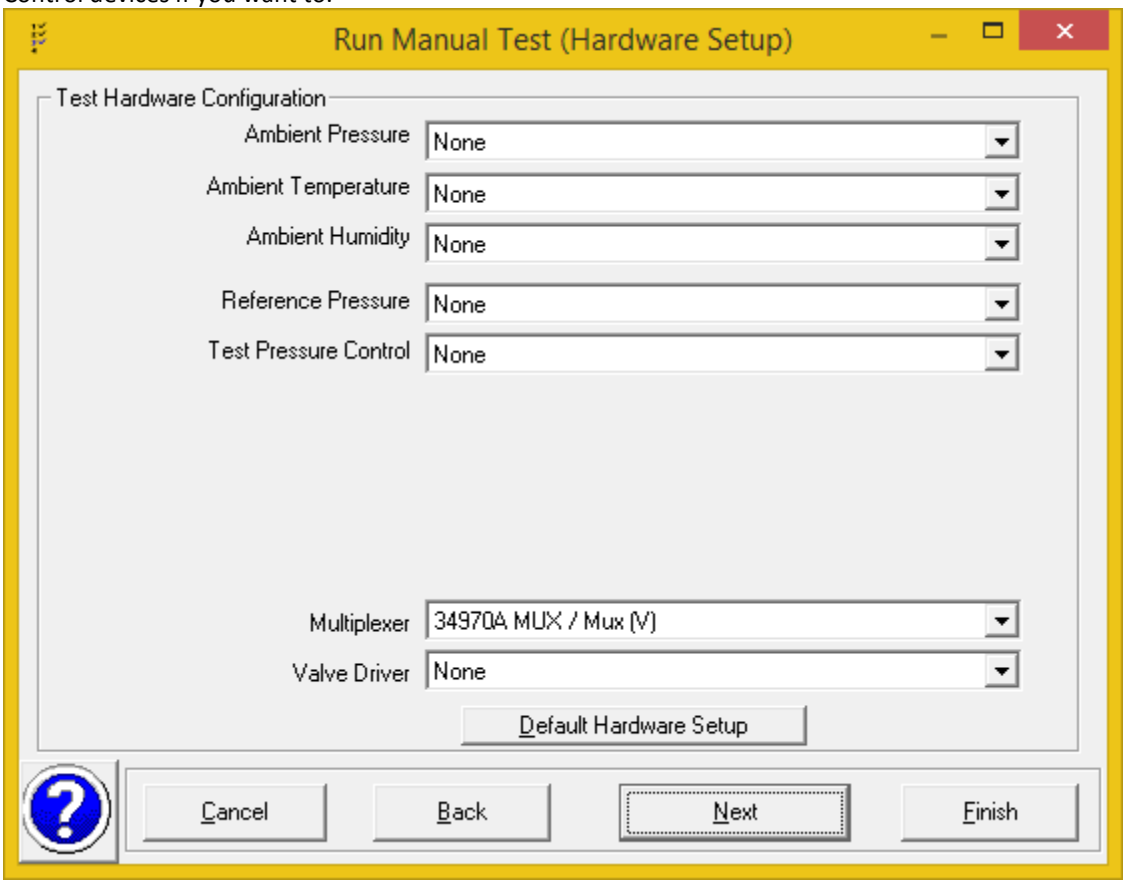
Set the multiplexor channel in the “Channel” box. The channel will automatically increment for any more DUTs. Edit as necessary.



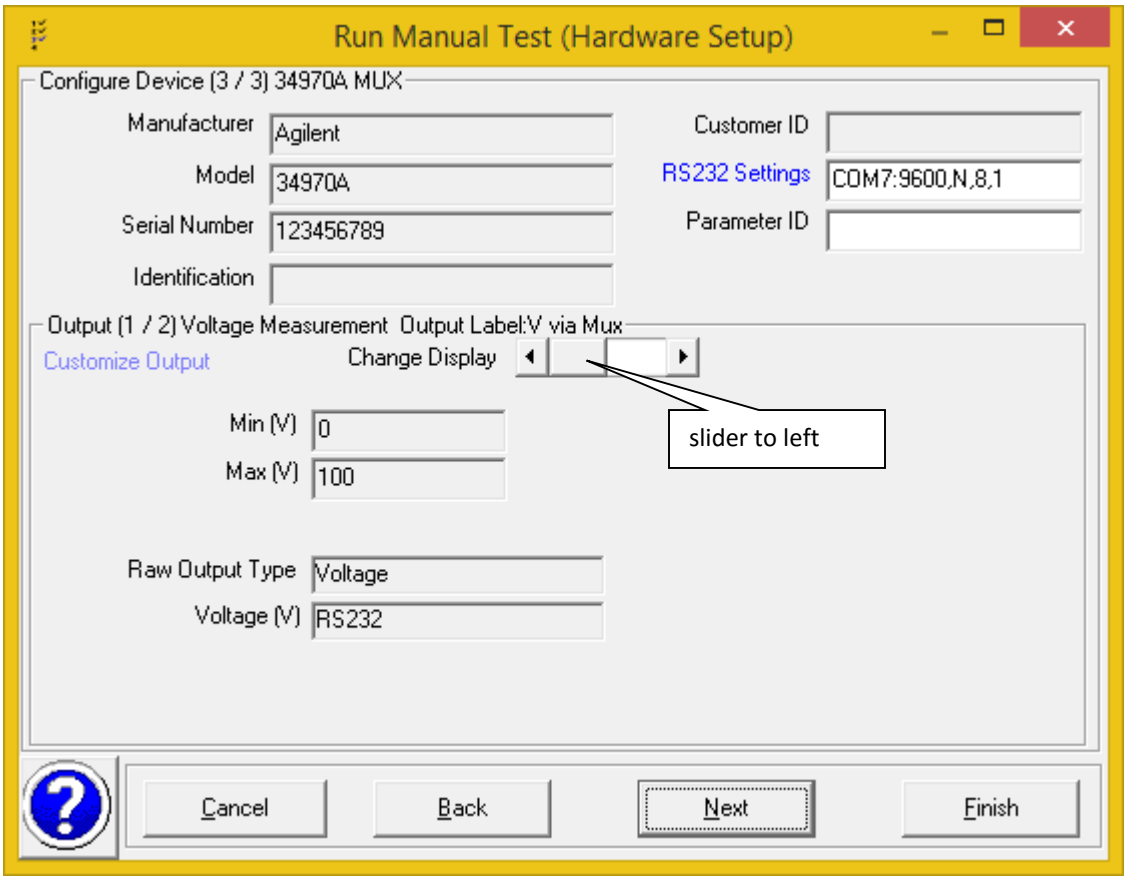
DUT 2

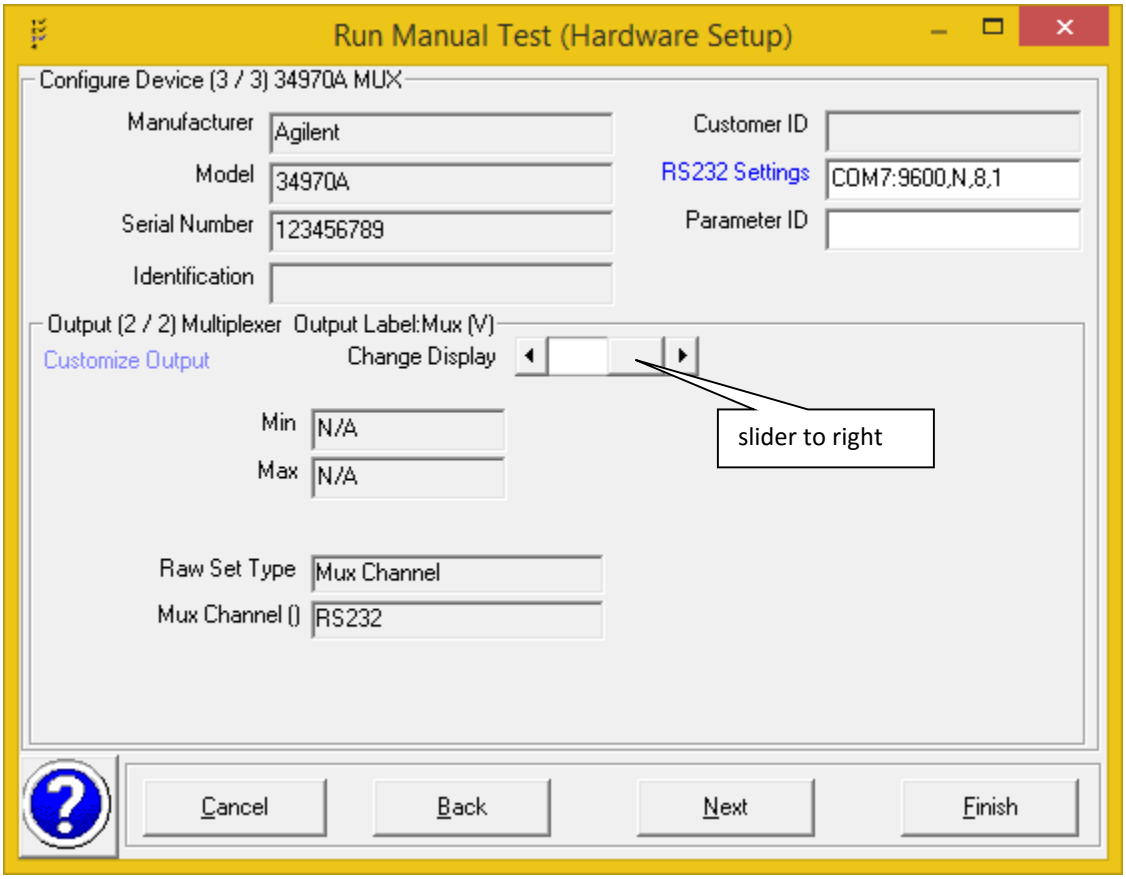


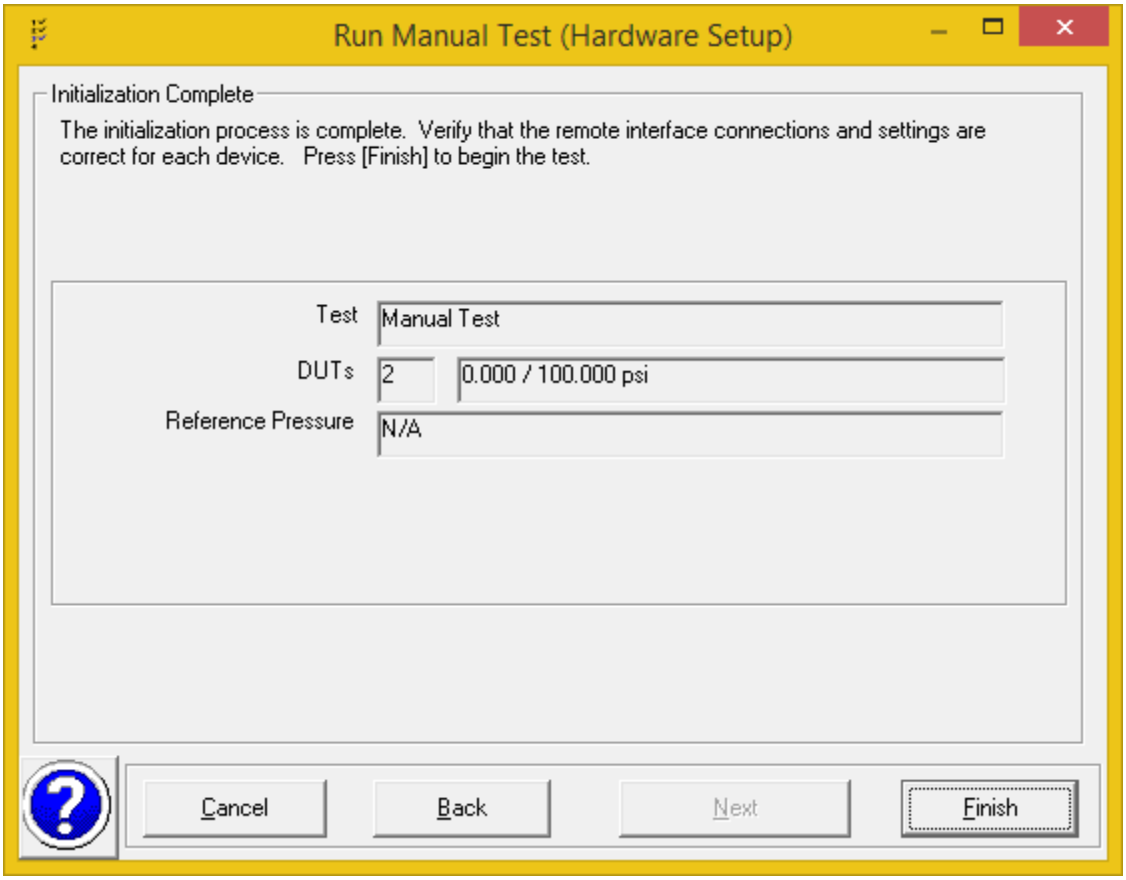
For the multiplexor choose the “Mux(V)” output not the “Mux Channel” Output. Choose a Reference Pressure and Test Pressure Control devices if you want to.



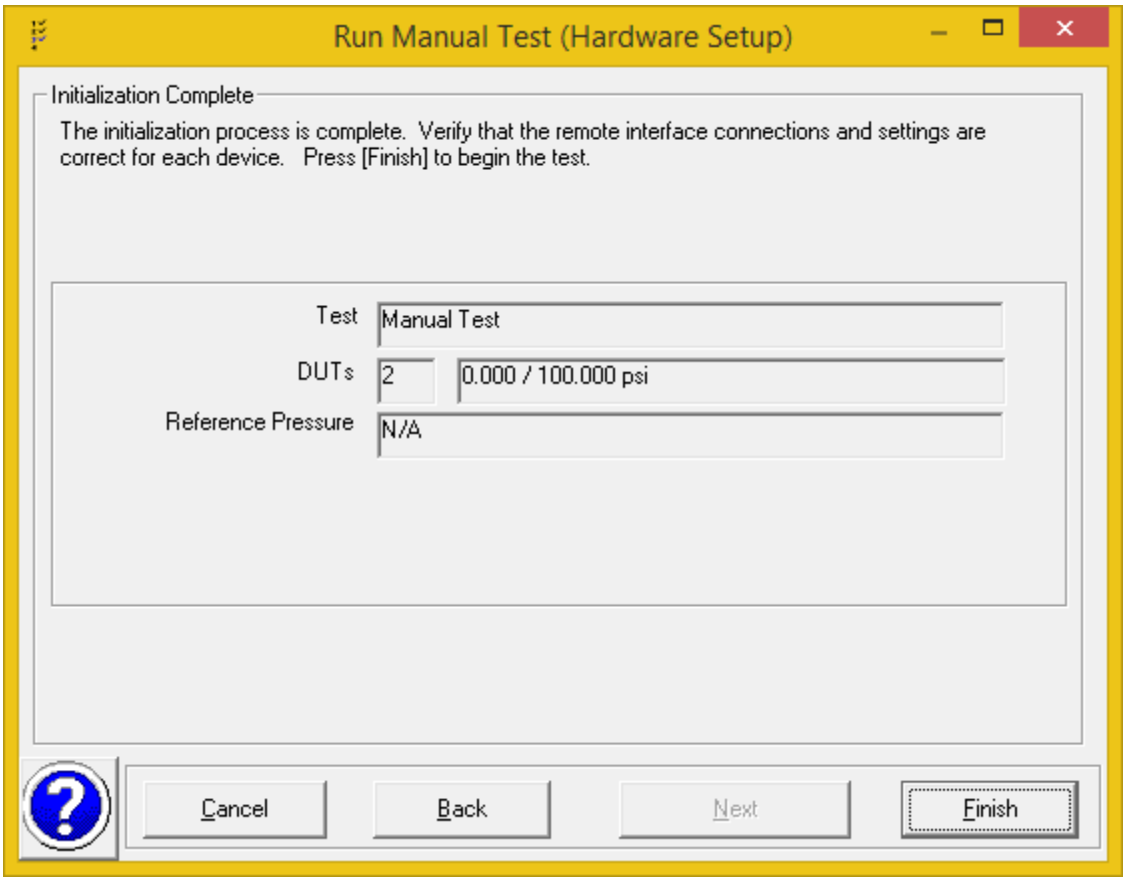
The screen for the 34970A shows that it has two outputs; a read output “V via Mux” and a set output “Mux (V)”





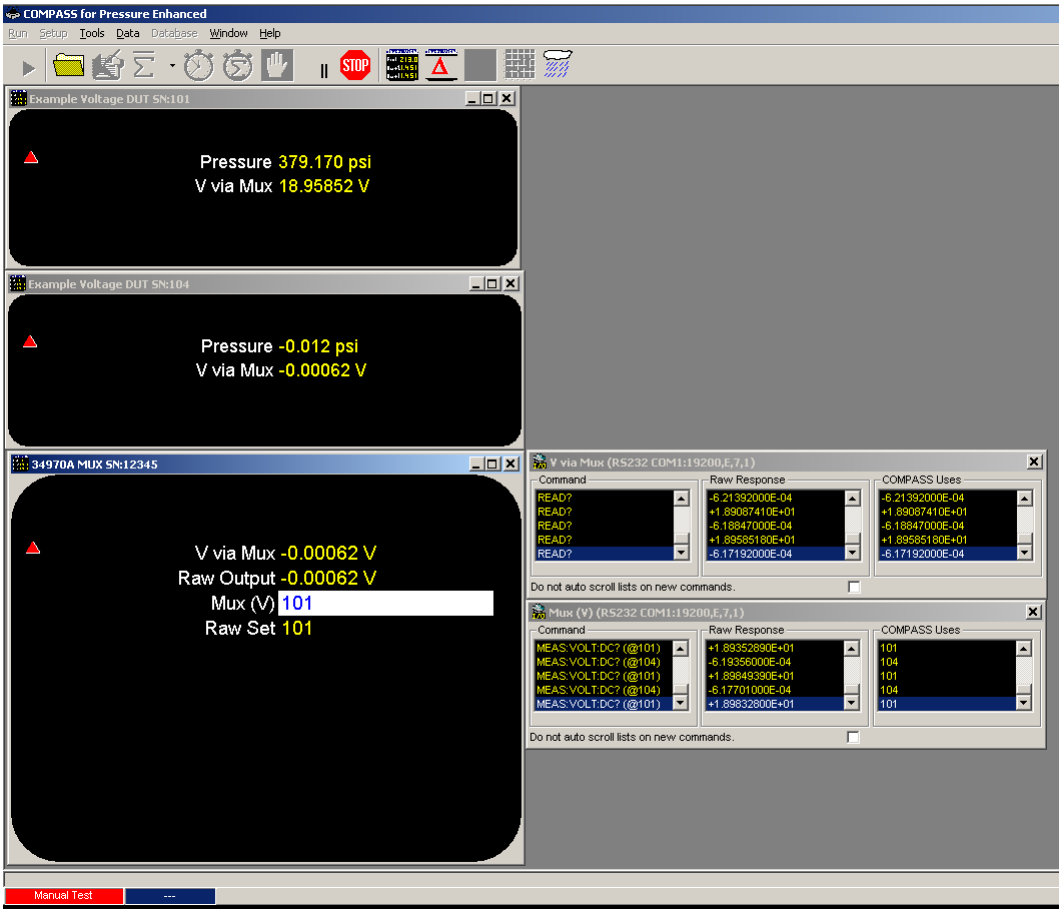


The final verification screen



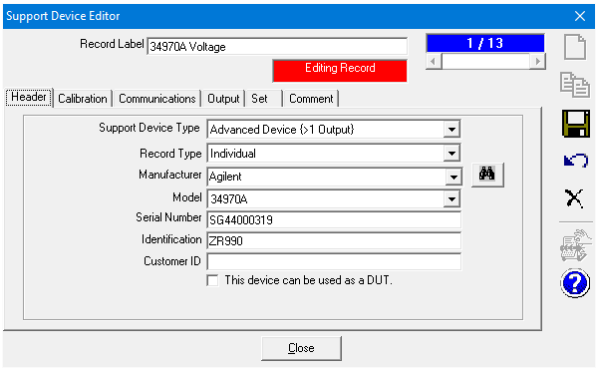
Here is the COMPASS Run Window.
The interface spy is shown on this COMPASS Run window. Display it by clicking on the yellow value for an output (like V via Mux) and selecting “Display Interface Spy” from the drop-down list. More details on this here, https://flukecorporation.zendesk.com/hc/en-us/articles/204703360

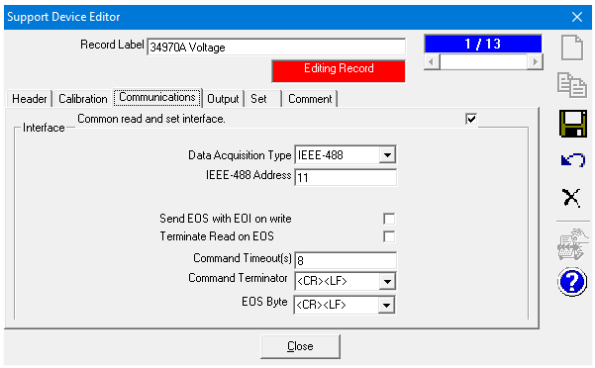
Note that the 34970 is switching from channel 101 to 104 and the voltage is being read for each channel appropriately.

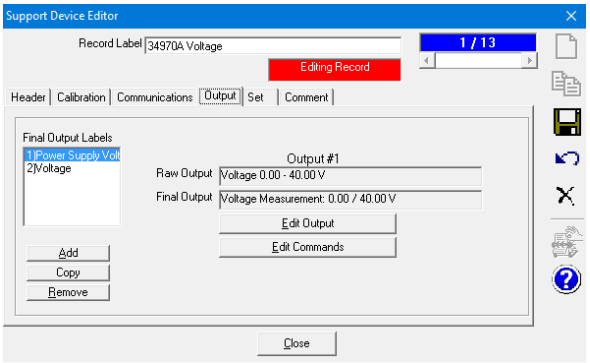

COMPASS for Pressure Enhanced
Run Setup Tools Data Database Window Help
STOP
Example Voltage DUT SN:101
Pressure 379.170 psi
V via Mux 18.95852 V
Example Voltage DUT SN:104
Pressure -0.012 psi
V via Mux -0.00062 V
34970A MUX SN:12345
V via Mux -0.00062 V
Raw Output -0.00062 V
Mux (V) 101
Raw Set 101
V via Mux (RS232 COM1:19200,E,7,1)
Command
Raw Response
COMPASS Uses
READ?
-6.21392000E-04
+1.89087410E+01
-6.18847000E-04
+1.89585180E+01
-6.17192000E-04
Do not auto scroll lists on new commands.
Mux (V) (RS232 COM1:19200,E,7,1)
MEAS:VOLT:DC? (@101)
MEAS:VOLT:DC? (@104)
+1.89352890E+01
-6.19356000E-04
+1.89849390E+01
-6.17701000E-04
+1.89832800E+01
101
104
Manual Test

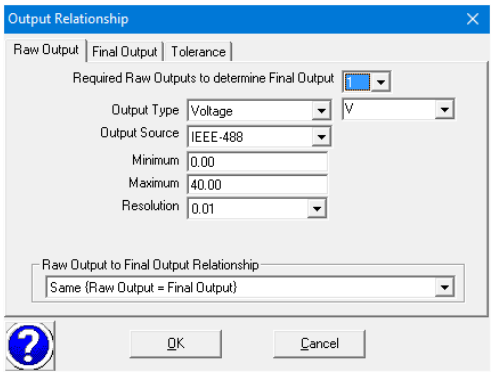
Agilent 34970A Multiplexor Setup Using its Internal DMM to Read Voltage from a Power Supply on a specific channel

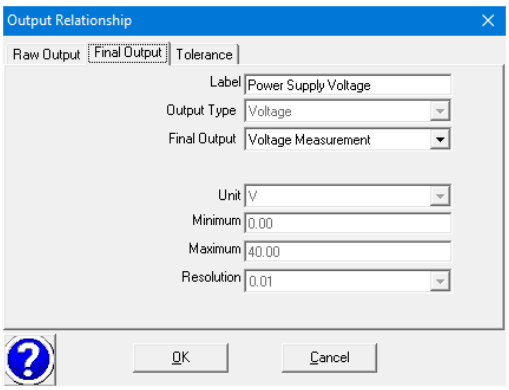
This is in addition to the above examples and can be used when you want to monitor power supply voltage on a specified channel of the 34970A

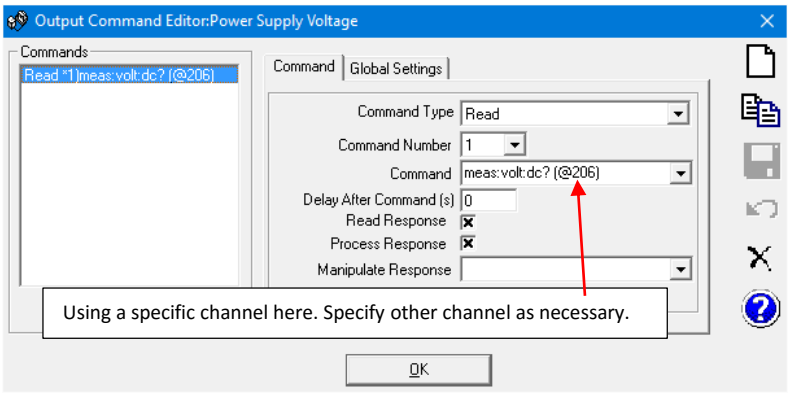


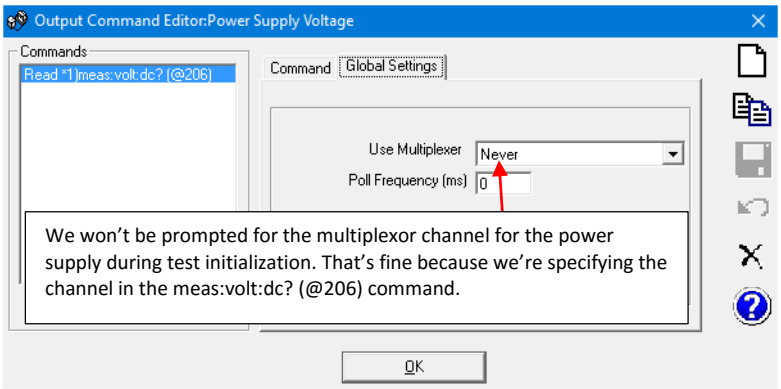
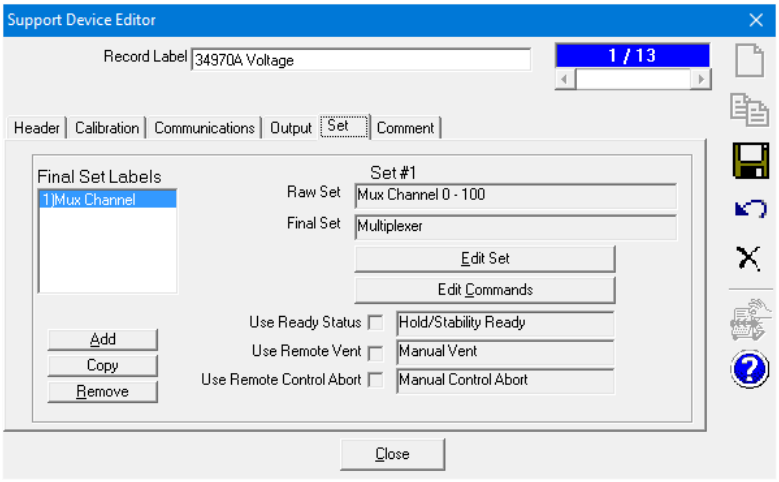












The multiplexor output in COMPASS won't be used because we're using the direct and specific command "meas:volt:dc? (@206)" to read the power supply voltage. With this method it's assumed that the power supply will always be on channel 206. We won't be prompted for the multiplexor channel for the power supply during test initialization.