



VEBKO ONLINE HELP

Excitation Tab

Category	tester
Section	capacitor voltage transformer
Language	English
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In fact, "Excitation" or saturation test, analyzes the characteristic of the core. In this test, by decreasing the frequency, a method is used to keep the voltage at a safe level. The core flux is in accordance with the relation between the voltage and the frequency and by using this relation and to prevent high voltages in CVT primary, it is possible to use a lower voltage for the test by decreasing the frequency. It should be noted that the software calculates and displays the saturation point in the nominal frequency. Moreover, decreasing the frequency helps to remove the effects caused by the stray capacity of the primary side.

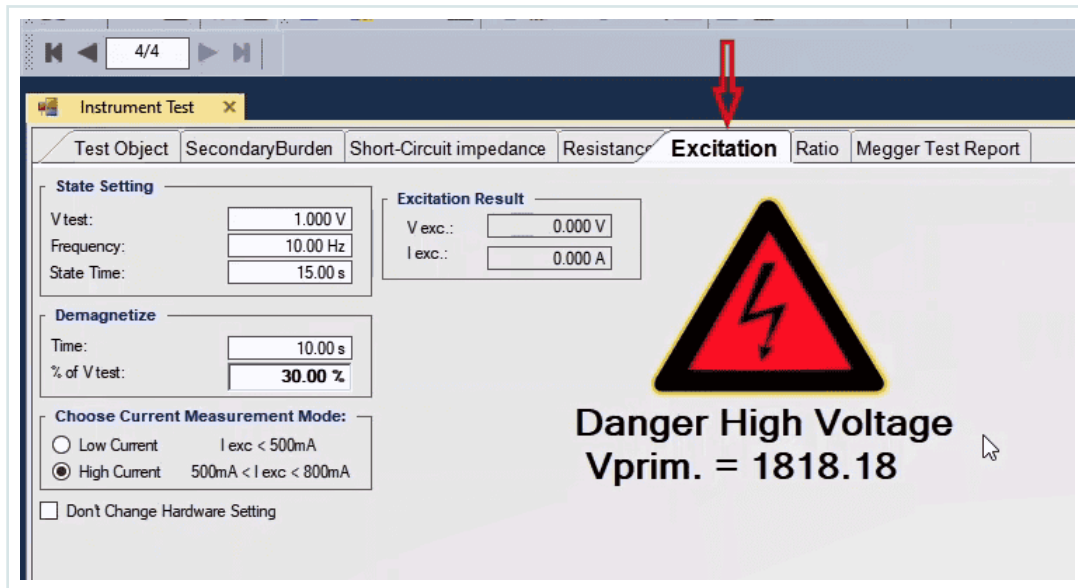


Figure 1

Since the CVT damping circuit is used to stop the Ferro resonance effects, before performing the saturation test, it is necessary to isolate its circuit from CVT. Moreover, to perform coil resistance, secondary short-circuit impedance and saturation tests, it is necessary to detach the PLC/NHF terminal from the ground so that the high voltage does not cause any problem.

Doing the wiring in accordance with the picture and applying AC voltage to the secondary coil, the saturation curve is obtained. In this process, the voltage of the secondary terminal, excitation current and the phase angle between the excitation voltage and current are measured. In this room, first, it is necessary for the amount of voltage intended for the test, frequency and test duration to be entered in "State Setting" section. In this section, in fact, "Vtest" is "Vend" and, in this field, the test voltage increases from zero to the specified voltage.

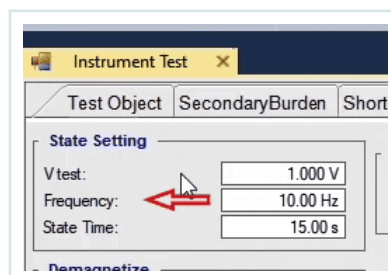
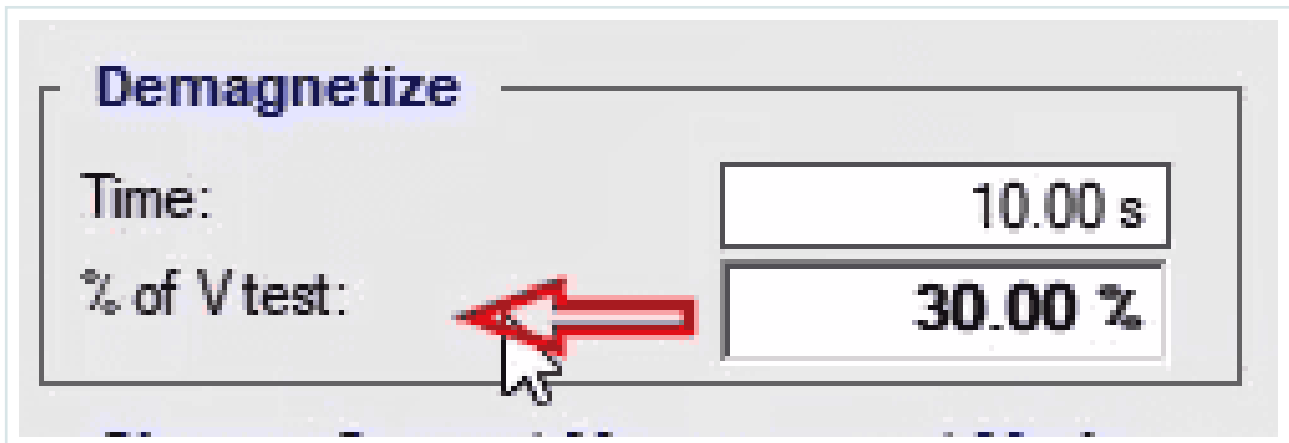


Figure 2

In “Demagnetize” section, before performing the saturation test, the software demagnetizes the “CVT” by AC voltage so that the residue flux caused by the “DC” resistance test is eliminated. In this section it is necessary to enter the “Demagnetization” time and the voltage in terms of a percentage of the “Vend”.



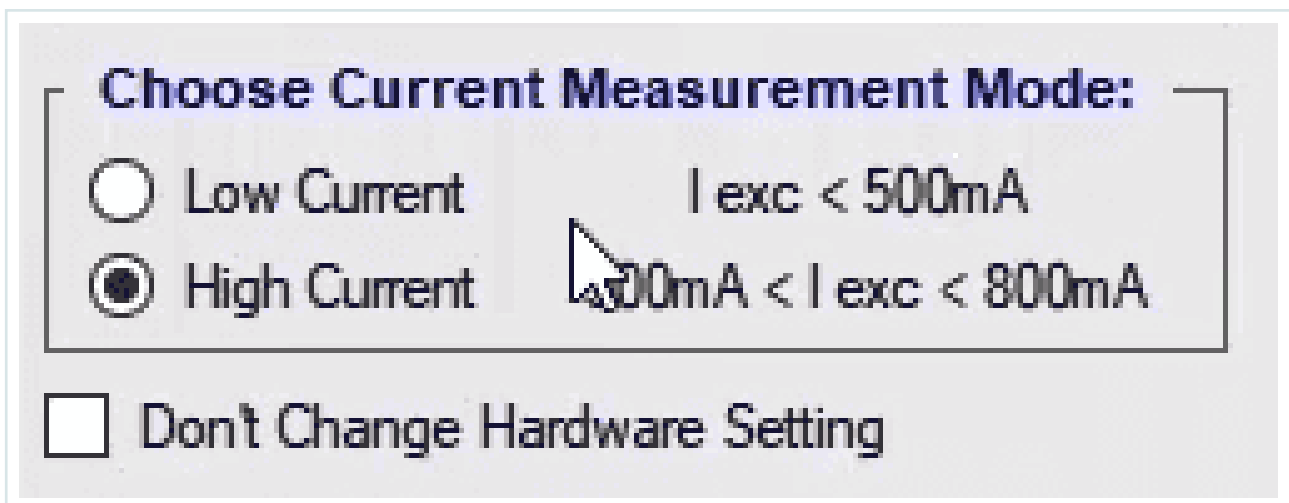
Demagnetize

Time: 10.00 s

% of V test: 30.00 %

Figure 3

In “Choose Current Measurement Mode” section, it is possible to specify the current measurement mode so that the proper algorithm is applied in accordance with the current range. In this case, it should be noted that if the load current is low, it is better to use “Low current” mode because in this mode, the accuracy of load current measurement is higher.



Choose Current Measurement Mode:

☐ Low Current $I_{exc} < 500\text{mA}$

☒ High Current $500\text{mA} < I_{exc} < 800\text{mA}$

☐ Don't Change Hardware Setting

Figure 4

1 Performing the test and analyzing the results

To perform this test, as an example, 20 volts, 10 Hz, 15s, and "High Current" are entered as "Vtest", frequency, and test time and test mode. On this page a warning can be seen which says that in this test the primary side voltage will reach 36000 volts. Therefore, while performing this test, observing safety points is required. After specifying the settings, the wiring should be done in accordance with the picture. In this wiring, the voltage of the first phase of the device is connected to the positive polarity of the capacitor and after connecting two negative polarity of the capacitors, the positive polarity of the second capacitor is connected to the positive polarity of the "CVT" and the other polarity of the "CVT" is connected to the null of the device. The reason for using the connections of capacitors in the path of applying voltage to the "CVT" is to filter the "DC" offset which is caused by the linear amplifier of the device.

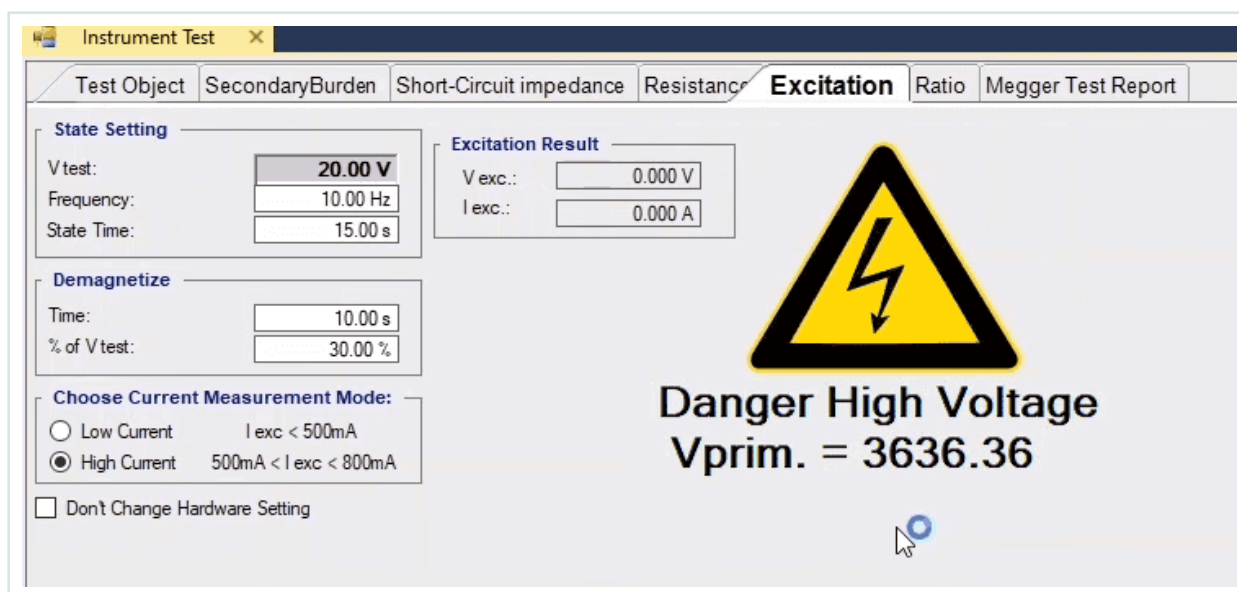


Figure 5

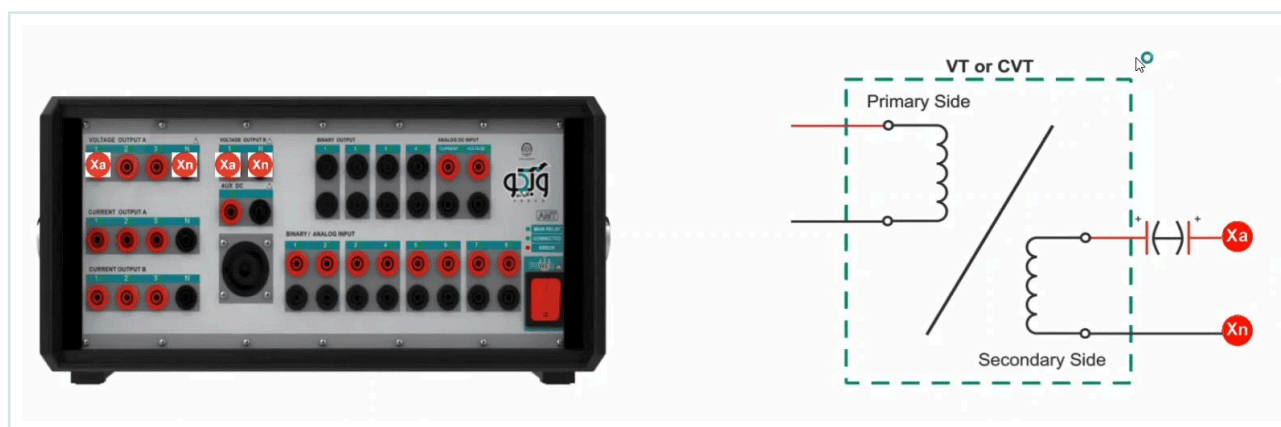


Figure 6

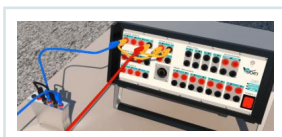


Figure 7

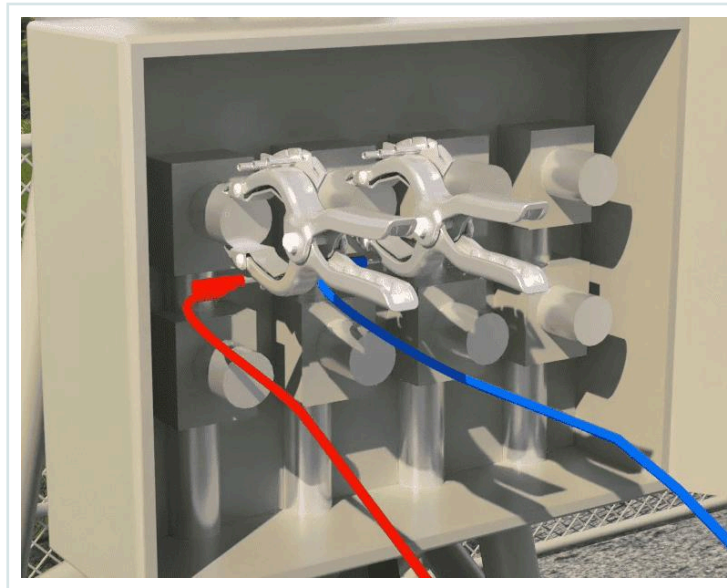


Figure 8

After doing the wiring, “Signal View” window is opened so that the signals of the load voltage and current and also the saturation curve can be viewed during the test. After completing these steps it is necessary to click on “Init Test” every time before performing the test so that the settings needed for the test are adjusted automatically. By running the test, it can be seen that first, the “CVT” is “Demagnetized” and then the saturation test is performed. After the test is finished, the test voltage and current are displayed on the diagram in “Excitation Result” box. After the test is finished, to add the test results to the report, click on “Add to Report”. Also, by using the cog next to this option, before selecting “Add to Report”, uncheck any item that you do not wish to be added to the report.

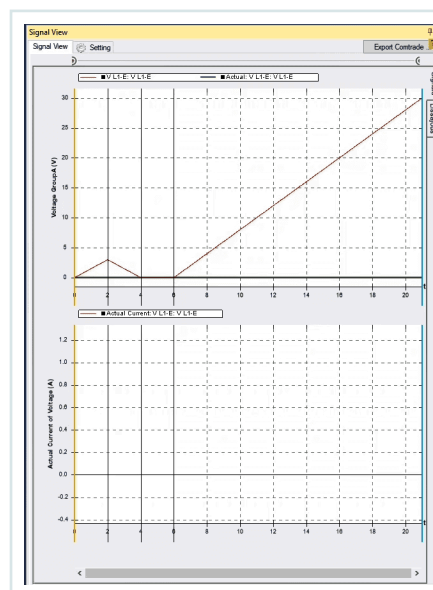


Figure 9

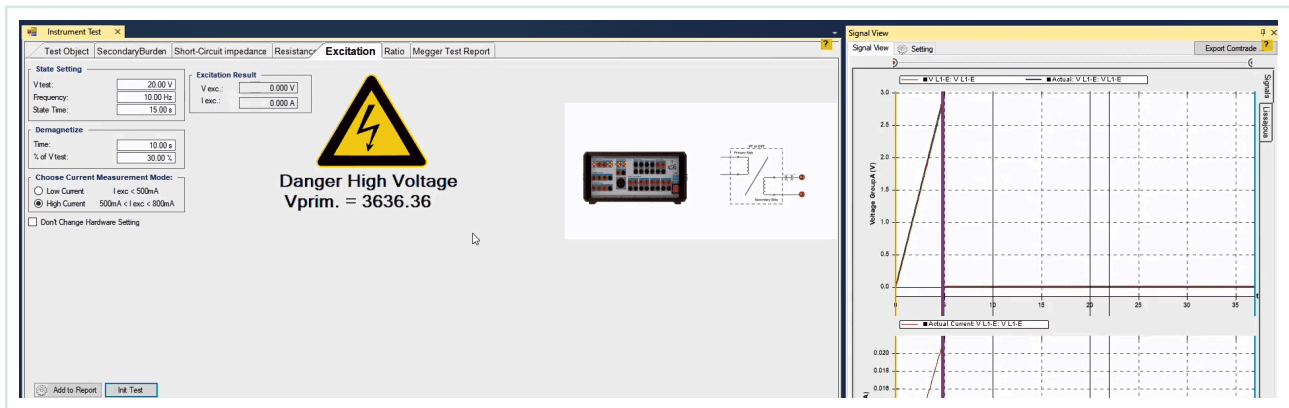


Figure 10

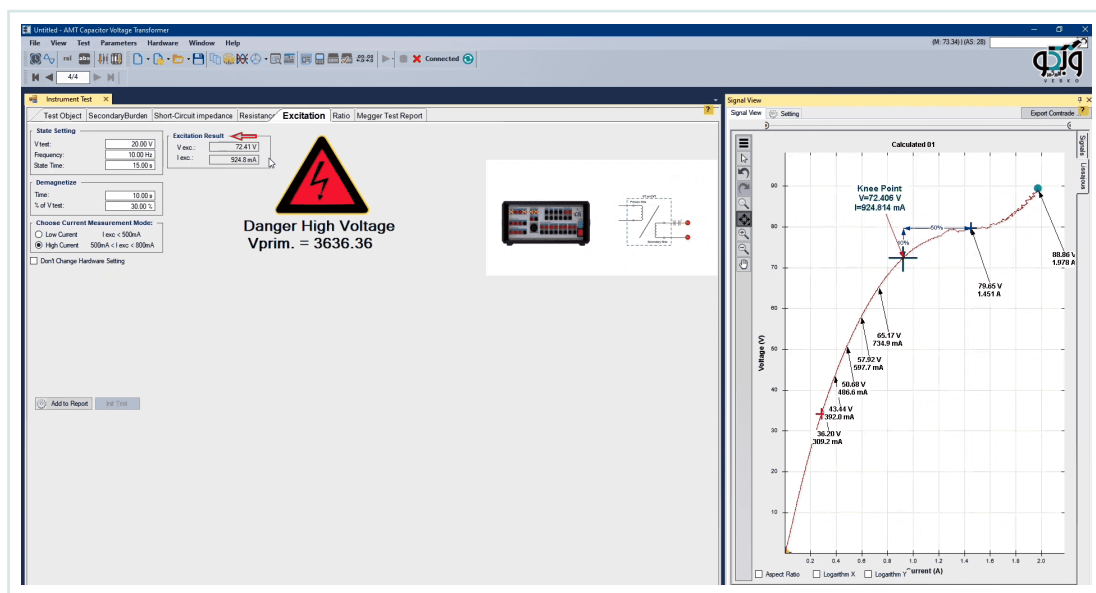


Figure 11

If for any reason, you wish to use a voltage other than the voltage of the first phase, first, press “Init Test” and then check “Don’t Change Hardware Setting” option and then select a different output from “Hardware Configuration” window and set its “Output Target” at “VL1-E” and after changing the wiring, run the test.

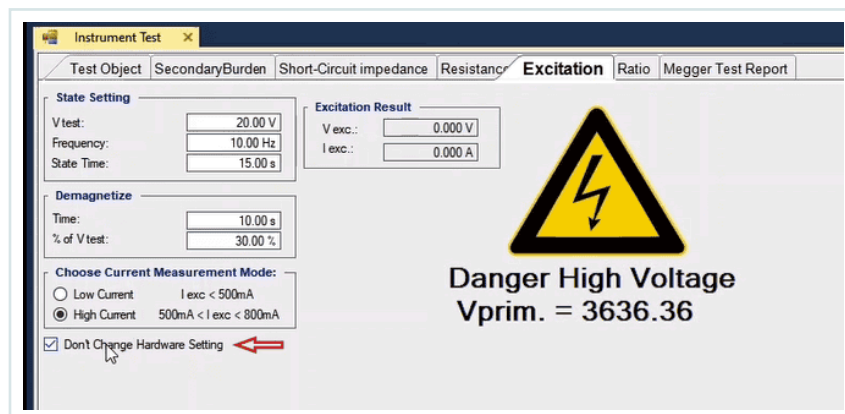


Figure 12

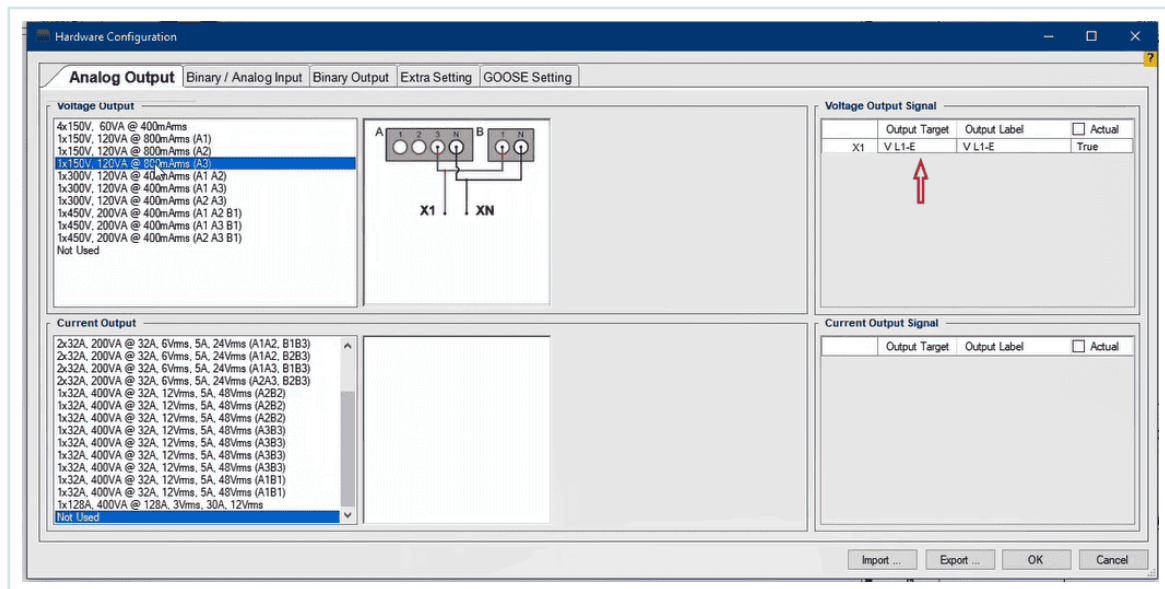


Figure 13

Note that if the device displays an “Overcurrent” error before finding the knee and saturation points, the wiring needs to be changed to “High Current” and the test can run after pressing “Init Test”. If again, the device displays an “Overcurrent” error before finding the saturation point, this means that the saturation point current is higher than the “limits” of the device and it is not possible to find the knee point using this device.

[jg1]Exaction_TAB