



VEBKO ONLINE HELP

Other Tests Performable in “Excitation Test” Tab

Category	tester
Section	Current Transformer Module
Language	English
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By checking "Extra Data", the additional information obtained from the excitation test is displayed. In the table of this section, the drawn current is displayed in E_{FS} with 110 percent. Moreover, in "Custom" row it is possible to enter the voltage and view the current drawn in that voltage. For example, the current drawn in a 50 volt is ... amps.

1 "Ratio Table"

In fact, this table is the standard turns ratio table which is completed by the software during the excitation test. Note that this table is completed using voltage turns ratio and in different burdens. Let us use a numerical example to explain how this section works. To begin the calculations, suppose that "Burden= 15 VA", Current equals $0.5I_n$, power factor equals 0.8 and CT resistance equals 2 ohms. To create the nominal burden in CT nominal current, we can suppose that a 12 ohm resistance is connected to the two ends of the terminal.

$$15VA * 0.8 = 12 VA = 1 * 12$$

According to the equivalent circuit, in $0.5I_n$ or 0.5 amp current, voltage of the parallel branch is achieved from

$$E_{Exc} = (R_{ct} + R_L) * I = (2+12)*0.5 = 7 V$$

According to the equivalent circuit, using the relation, voltage of the primary side is achieved as $7*1/500 = 14mV$. This number is the voltage which is (in half of the nominal current) to be measured in the primary. Therefore, to fill the $1.5I_n$ and 15VA cells, the software needs to create the 7volt in the the parallel (secondary) branch and measure its equivalent in the primary and finally, compare the measured value with the applied value. To create a 7 volt in the parallel branch, the device and the software need to apply " $V_{terminal}$ " voltage to the CT in accordance with the displayed relation.

$$V_{terminal} = E_{Exc} + R_{ct} * I \Rightarrow V_{terminal} = 7 + 2*I$$

Since the current loaded from the device can be viewed at any moment, the voltage of the device to create the 7 volt parallel branch is obtained. The mentioned process is repeated for all cells of this table and the turns ratio error, phase displacement, composite error and "ALF" are calculated for different burdens. To perform this test, after doing the wiring for excitation test, it is necessary to connect the CT primary to inputs 1 and 10 and run the test after pressing "Init Test". You will see that after the test is finished, the turns ratio obtained from "Ratio Table" is displayed in "N Turn". Other than this "Pol.Check", the tables related to this section are completed and the those cells that have error values beyond the allowed range are highlighted in red and displayed in "Error List" section. In the last table, "ALF" is calculated and displayed in different burdens.

2 Resistance Measurement

By checking " R_{dc} ", the winding resistance is measured using the voltage application and current measurement method. For this test, the capacitors are "Bypassed" using the binary output 1 and DC voltage is applied to the CT. Afterwards, input 5 is connected to the "CT" using binary output 3 and the actual voltage of the CT are measured. As you saw, during the process of resistance measurement, Binary outputs are closed. In the end, the resistance is measured.

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