

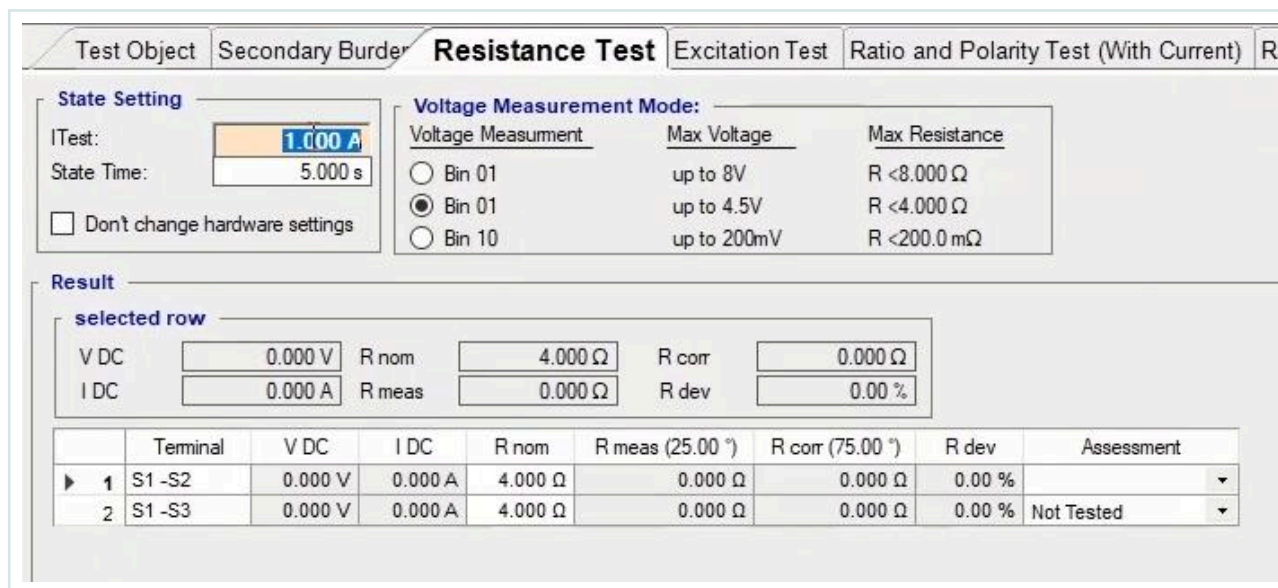


VEBKO ONLINE HELP

Winding Resistance Test

Category	tester
Section	Current Transformer Module
Language	English
Generated	2026-10-18

Winding resistance test is performed in "Resistance Test" tab. In this test by injecting "DC" current into "CT" secondary and measuring the voltage through "Binary Input" and dividing the voltage by current, the "DC" resistance or "Rmeas" is calculated. Note that in the software there is a row by default. If the "CT" has more taps, by right-clicking and selecting "Add" you can make as many taps as the rows and test each tap. To perform this test you need to enter the current and time in "State Setting" section in "I test" and "State Time" fields respectively. The current limitation is "32" amps but a "5" amps current for "5"amp "CTs" and a "1" amp current for "1" amp "CTs" would be enough.



The screenshot shows the "Resistance Test" tab in the software. The "State Setting" section has "I Test" set to 1.000 A and "State Time" set to 5.000 s. The "Voltage Measurement Mode" section shows "Bin 01" selected for "Max Voltage" up to 4.5V and "Max Resistance" R < 4.000 Ω. The "Result" section shows a table with two rows of data.

Terminal	V DC	I DC	R nom	R meas (25.00 °)	R corr (75.00 °)	R dev	Assessment
1 S1-S2	0.000 V	0.000 A	4.000 Ω	0.000 Ω	0.000 Ω	0.00 %	Not Tested
2 S1-S3	0.000 V	0.000 A	4.000 Ω	0.000 Ω	0.000 Ω	0.00 %	Not Tested

Figure 1

After entering the information, you need to set the wiring according to the figure. Note that by double-clicking on the picture you can maximize it. In this wiring, first short circuit "Ia1" and "Ib1" then parallel "Ia2" and "Ib2" with the capacitor box and here you need to connect "Ia2" to "S1" of the "CT" and connect "Ib2" to "S2" after. The reason for using the capacitor box is to compensate the self-inductor effect of the "CT". There are 3 "1000" microfarad capacitors in this box and the red port is the positive polarity while the black port negative polarity of the capacitor.

To measure the "DC" voltage, you should connect the "Input1" to the "CT" and further from the current connectors. Then, connect the output current which has been paralleled with the capacitor to the "CT". Note that to perform the test you should to right-click on one of the rows and select "Apply Test". By doing this, the current and time settings as well as the hardware settings related to the "Hardware Configuration" including the outputs and "Binary/Analog Inputs" are adjusted automatically. In "Analog Output" tab in "Hardware Configuration" section you can see that the wiring settings is set at "32A" with a "400" Volt-amperes burden and the "Binary/Analog Input1" is activated to measure the voltage. To better analyze the test you can use "Table View", "Detail View" and "Signal View". After opening "Table View", you can see that two zero frequency states are made by the information of "State Setting". The first state is used so that the "CT" current exits the transient state and turns constant. The second state is used to measure the current and voltage and to measure the

resistance. Now if you wish to view more information, use “Detail View” window.

	Terminal	V DC	I DC	R nom	R meas (25.00 °)	R corr (75.00 °)	R dev	Assessment
	S1 S2	0.000 V	0.000 A	4.000 Ω	0.000 Ω	0.000 Ω	0.00 %	
		0 V	0.000 A	4.000 Ω	0.000 Ω	0.000 Ω	0.00 %	Not Tested

Apply Test
Clear Result
Add
Delete

Figure 2

Hardware Configuration

Analog Output
Binary / Analog Input
Binary Output
Extra Setting

Voltage Output
4x150V, 60VA @ 400mAms
1x150V, 120VA @ 800mAms
1x300V, 120VA @ 400mAms
1x450V, 200VA @ 400mAms
Not Used

Voltage Output Signal
Output Target
Output Label
Show Actual Value

Current Output
6x32A, 100VA @ 32A, 3Vrms, 5A, 12Vrms
3x64A, 200VA @ 64A, 3Vrms, 10A, 12Vrms
2x32A, 200VA @ 32A, 6Vrms, 5A, 24Vrms
1x32A, 400VA @ 32A, 12Vrms, 5A, 48Vrms
1x128A, 400VA @ 128A, 3Vrms, 30A, 12Vrms
Not Used

Current Output Signal
Output Target
Output Label
Show Actual Value
X1
IL1
IL1
True

A 1 2 3 N
X1
XN
B 1 2 3 N

Import ...
Export ...
OK
Cancel

Figure 3

Table View

S1
Normal
General
Direct
S2
Normal
General
Direct

Name
Resistance Test(With Current)
Resistance Test(With Current)

IL1: IL1
1.000 A
0.000 1/s
0.000 Hz
1.000 A
0.000 1/s
0.000 Hz

Bin. Out
5.000 s
1.000 s

Trigger
Normal
Normal

Type
Normal
Normal

Comment

Trigger Condition
C1
Bin. in 1
C1
Bin. in 1

Bin. Input

Report
SignalView
Table View
Detail View (S1: Resistance Test(With Current))
Measurement View

Figure 4

1 Performing the Test and Analyzing the Results

After wiring, "1" amp and "2" seconds are entered as test current and time and 10 RMS Accuracy is selected as time period and by right-clicking on one of the rows and selecting "Apply Test" the test is initiated. Note that in "Signal View", the waveform of the actual current and the voltage measured by "Binary Input" is viewable. By using "Signal View" and the recorded current and voltage waveforms, it is possible to analyze the test and by using the "Actual" values and the recorded voltages, examine the connection of the connectors.

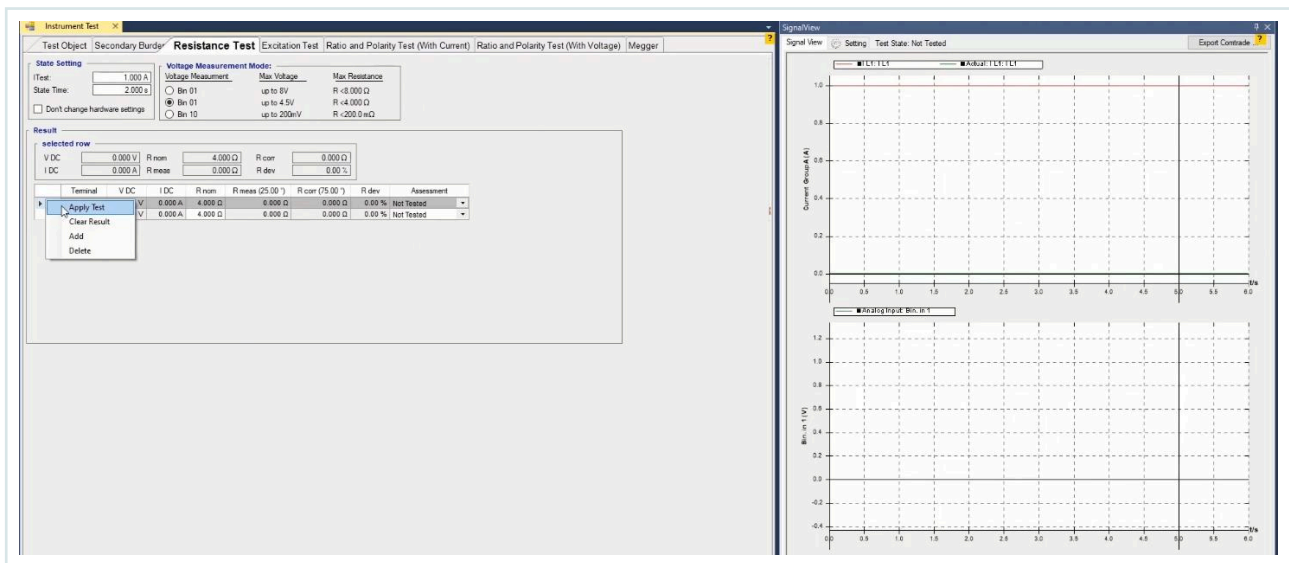


Figure 5

After the test is finished, by selecting the row in "Result", it is easily possible to view the test results. The results include "Vdc", the injected current, "Rnom" (or "Max Rct"), the resistance measured in the current temperature, the resistance measured in the reference temperature and "Rdev" of the difference between "Rcorr" and "Rnom" in terms of percent. In "Correction Factor", the current ambient temperature and the reference temperature as well as the material of the coil calculate correction factor. The information of this temperature is entered in "Reference Winding" field in "Test Object" and "Rcorr" is calculated by multiplying the "Rmeas" value by the "Correction Factor".

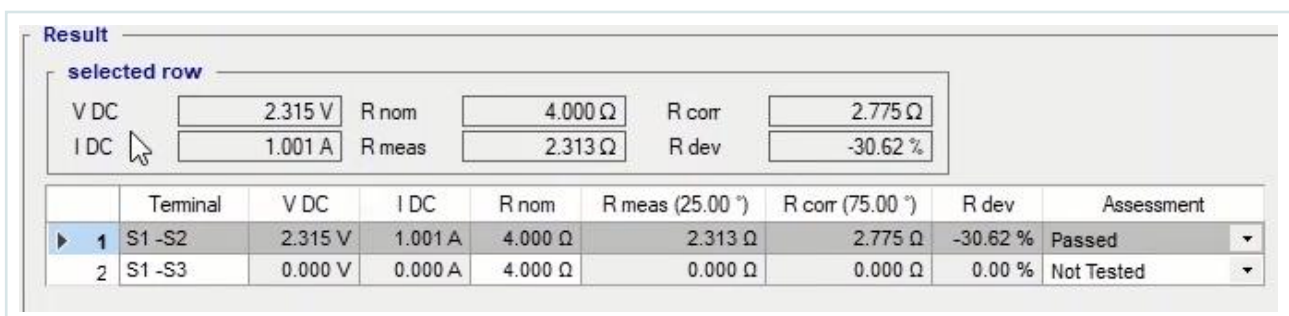


Figure 6

Sometimes it is possible that in the CT test sheet, the resistance is measured in a temperature other than the one mentioned in the plate. If you wish to enter this resistance, you need to check "R Man. (Ref. Temp.)". By doing so, this resistance and its temperature are considered as the reference. By doing this, in "Resistance Test" tab, "Temp. Manufacturer" column is added to the results table. In this column the temperature measured by the factory is calculated. In the end, after performing the test, if "Rcorr" is smaller than "Rnom", the "Assessment" is passed, in otherwise it fails. After the assessment, you should add the results to the report via "Add to Report" in equipment test.

Result

selected row

V DC	2.315 V	R nom	4.000 Ω	R corr	2.775 Ω
I DC	1.001 A	R meas	0.000 Ω	R dev	0.00 %

	Terminal	V DC	I DC	R nom	R meas (25.00 °)	R corr (75.00 °)	R dev	Temp. Manufacturer	Assessment
1	S1 -S2	2.315 V	1.001 A	4.000 Ω	2.313 Ω	2.775 Ω	-30.62 %	-157 °C	Passed
2	S1 -S3	0.000 V	0.000 A	4.000 Ω	0.000 Ω	0.000 Ω	0.00 %	0 °C	Not Tested

Figure 7

Also if you wish to add some specific parts to the report or delete and edit the report, you can use the "Add to Report" cog. By clicking on it, you can check the items that should be added to the report or if you don't need them you can uncheck them. Note that after performing each test, the results are not automatically added to the report and it is necessary to add the results to the output report by selecting "Add to Report" after each test and before clearing the test.

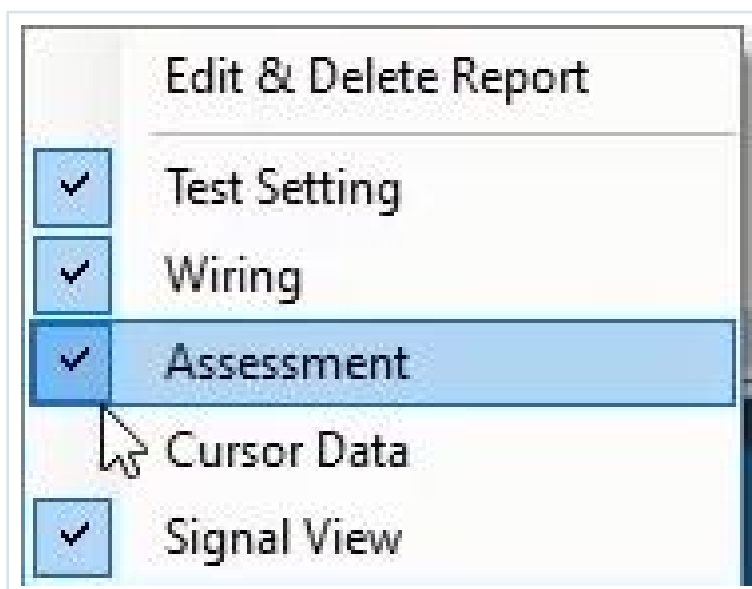


Figure 8

In performing the test, note that in "Voltage Measurement Mode", you need to select one of the radio-buttons in accordance with the maximum resistance specified in "Max Resistance" column. If during the test in the default mode an over voltage error appears, select "Bin01" with a maximum of "8"

volts. If the measured resistance is less than the maximum resistance of the “Bin10”, use the “Input” 10 for more accuracy. Also, if you wish to use a different wiring for the current, select “Apply Test” at least one time before. Then check “Don’t Change Hardware Setting” and select your desired wiring in “Hardware Configuration” and then select “Apply Test” again.

State Setting
I Test:
State Time:
☒ Don't change hardware settings

Voltage Measurement Mode:

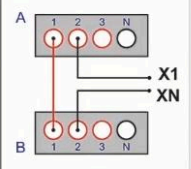
Voltage Measurement	Max Voltage	Max Resistance
☐ Bin 01	up to 8V	R <8.000 Ω
☐ Bin 01	up to 4.5V	R <4.000 Ω
☒ Bin 10	up to 200mV	R <200.0 m Ω

Figure 9

Hardware Configuration
Analog Output | Binary / Analog Input | Binary Output | Extra Setting

Voltage Output
4x150V, 60VA @ 400mAms
1x150V, 120VA @ 800mAms
1x300V, 120VA @ 400mAms
1x450V, 200VA @ 400mAms
Not Used

Current Output
6x32A, 100VA @ 32A, 3Vrms, 5A, 12Vrms
3x64A, 200VA @ 64A, 3Vrms, 10A, 12Vrms
2x32A, 200VA @ 32A, 6Vrms, 5A, 24Vrms
1x32A, 400VA @ 32A, 12Vrms, 5A, 48Vrms
1x128A, 400VA @ 128A, 3Vrms, 30A, 12Vrms
Not Used



Voltage Output Signal

Output Target	Output Label	Show Actual Value
		☐

Current Output Signal

Output Target	Output Label	Show Actual Value
X1	IL1	☒ True

Import ... Export ... OK Cancel

Figure 10

Two notable points are that “Error Other” shows that there is a problem in the wirings or resistance is too high that the device is not able to provide the “Burden” to inject the current. Therefore, if this error appeared, examine the actual value of the current in the “Signal View”. If the current is injected (“Actual Current”) but its difference with the set current is too much, the wiring resistance is too high and if “Actual Current” is zero, the route is open. If the resistance is too high, the current should be decreased and if the “Actual Current” equals zero, you need to examine the connections. The other point is that if the measured voltage is zero or has too high tolerances, it means that the connectors are not connected correctly.



Figure 11



Figure 12

[jg1]Winding_resistance_test2