



VEBKO ONLINE HELP

“Magnetic Balance” Tab

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

1 Imported Content

The transformer magnetic flux test is performed in this tab. In this test, the voltage is applied to a voltage transformer coil and the voltage of other coils is measured and the flux division ratio between the two other coils is analyzed. Two important points for this test are that firstly magnetic balance test is not performed for single-phase transformers and secondly, this test can be performed on three-phase transformers only in the side where there is a grounded neutral.

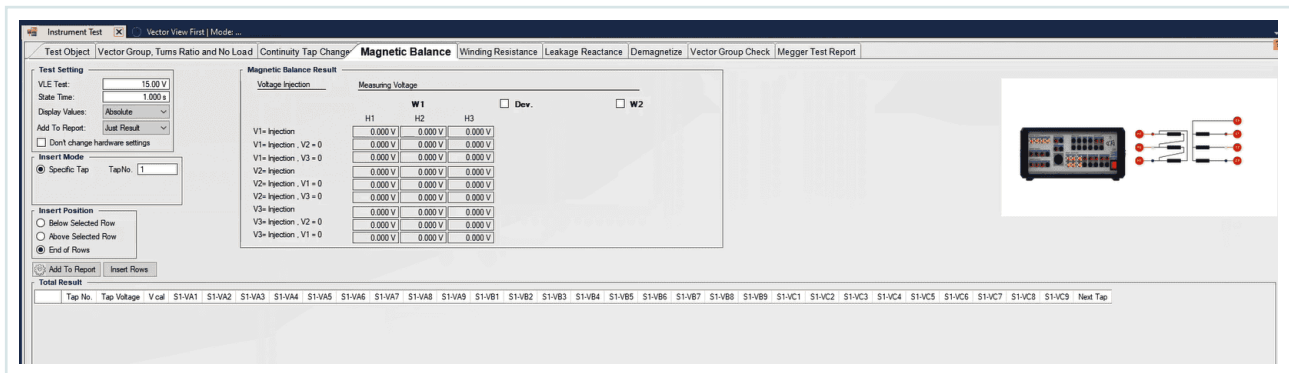


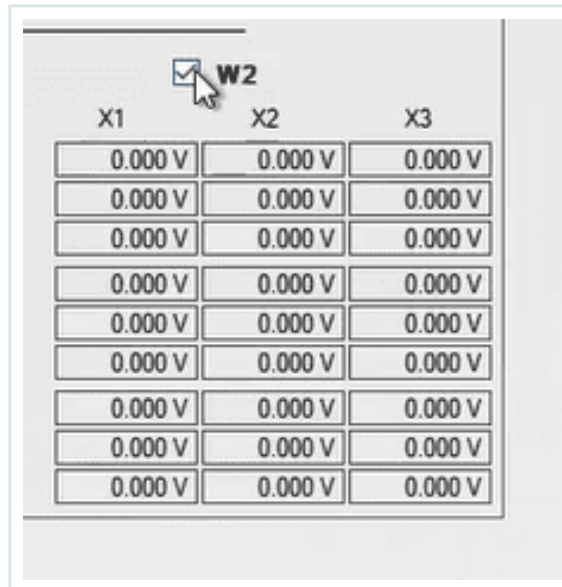
Figure 1

Flux division test has three steps for every phase. In the first step, voltage is applied to coil #1 and voltages of the two other coils are measured. In the second step the second coil is short circuited and voltage is applied to the coil of phase #1 and voltages of the two ends of the third coil are measured. In the third step, the third coil is short circuited and by applying voltage to phase #1, voltages of the two ends of coil #2 are measured. These steps are repeated for the two other phases. Note that the voltage of the short circuited coil is zero and during all three steps, sum of the measured voltages of the two coils must equal the voltage applied to the first coil.

If "Dev." option is checked, the total difference between the two measured phases and the phase to which the voltage is applied is calculated and is displayed in "Dev%" field in terms of a percentage of the applied voltage. Also, if you wish to measure the voltage that occurs to the secondary side of the transformer during the test, you can use "W2" option. Note that if this option is checked, you need to do another step of wiring.

Magnetic Balance Result				
Voltage Injection		Measuring Voltage		
		W1		
		H1	H2	H3
V1= Injection		0.000 V	0.000 V	0.000 V
V1= Injection . V2 = 0		0.000 V	0.000 V	0.000 V
V1= Injection . V3 = 0		0.000 V	0.000 V	0.000 V
V2= Injection		0.000 V	0.000 V	0.000 V
V2= Injection . V1 = 0		0.000 V	0.000 V	0.000 V
V2= Injection . V3 = 0		0.000 V	0.000 V	0.000 V
V3= Injection		0.000 V	0.000 V	0.000 V
V3= Injection . V2 = 0		0.000 V	0.000 V	0.000 V
V3= Injection . V1 = 0		0.000 V	0.000 V	0.000 V

Figure 2



X1	X2	X3
0.000 V	0.000 V	0.000 V
0.000 V	0.000 V	0.000 V
0.000 V	0.000 V	0.000 V
0.000 V	0.000 V	0.000 V
0.000 V	0.000 V	0.000 V
0.000 V	0.000 V	0.000 V
0.000 V	0.000 V	0.000 V
0.000 V	0.000 V	0.000 V
0.000 V	0.000 V	0.000 V
0.000 V	0.000 V	0.000 V

Figure 3

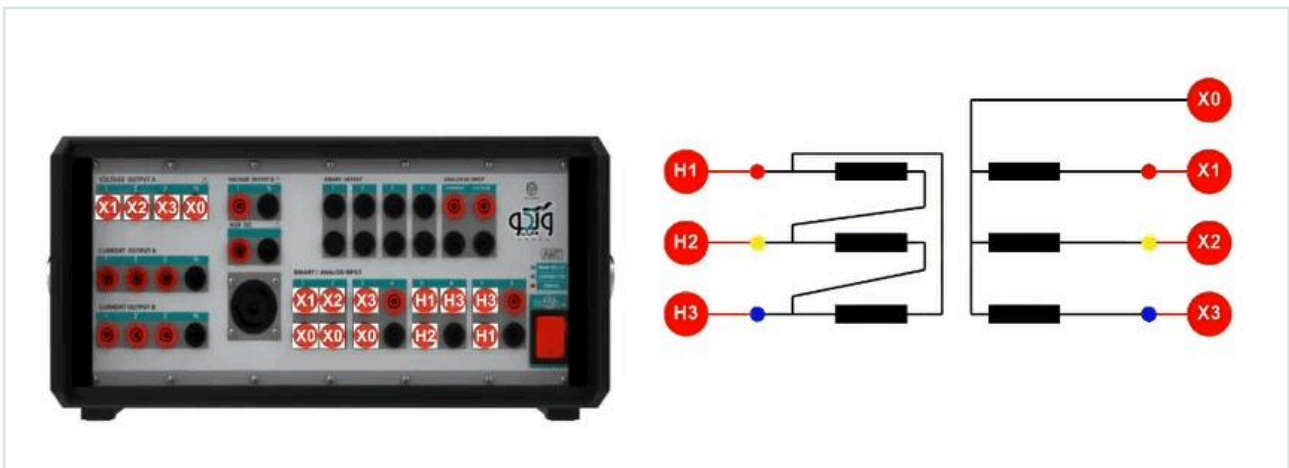
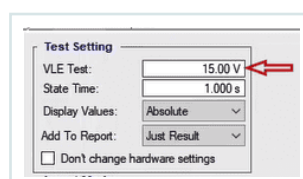


Figure 4

In "Test Setting" section, the settings related to the test is entered. Also, in "VLE Test" and "State Time", the amount of voltage of the test and the test performance time of the test are entered, respectively. In "Display Values" it is specified that the test results are to be displayed as numerical values (in terms of volt) or as a percentage of the voltage of the test. If "Absolute" is selected, the applied voltage and the measured voltages of different taps are displayed in terms of volt while if "Relative" is selected, these voltages are displayed in terms of a percentage of the test voltage.



Test Setting

VLE Test: 15.00 V

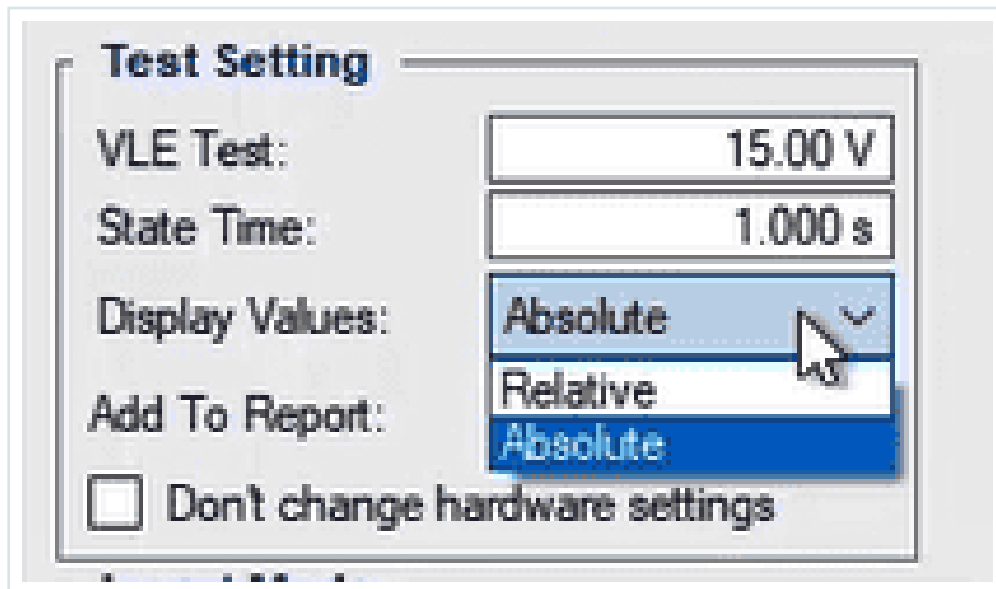
State Time: 1.000 s

Display Values: Absolute

Add To Report: Just Result

☐ Don't change hardware settings

Figure 5



Test Setting

VLE Test: 15.00 V

State Time: 1.000 s

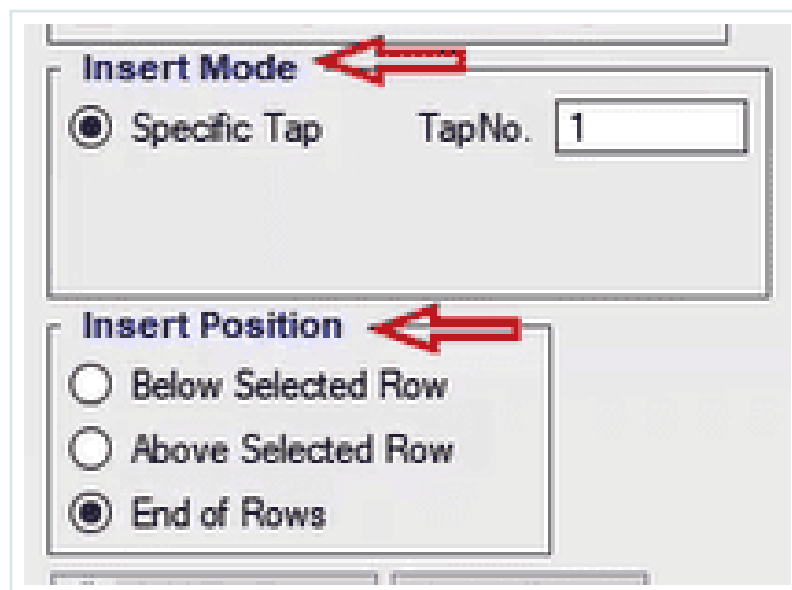
Display Values: Absolute
Relative
Absolute

Add To Report:

☐ Don't change hardware settings

Figure 6

The use of "Insert Mode" and "Insert Position" sections are exactly the same as those explained in conversion ratio test video. In "Magnetic Balance Result", the results of the flux division test are displayed. This section is designed to help better analyze the test results. In this section, the voltage is injected from a phase and the voltage induced to the two ends of the coil is read by the inputs and displayed in this section. By checking "Insert Rows", a row is added to the test table in accordance with the settings adjusted in "Total Result" and all the results of the test are displayed in a row.



Insert Mode

☒ Specific Tap TapNo. 1

Insert Position

☐ Below Selected Row

☐ Above Selected Row

☒ End of Rows

Figure 7



Figure 8

Performing the test and analyzing the results: "15" volts is specified to perform the test and after selecting "Insert Rows" and inserting the transformer "Taps", the wiring needs to be done in accordance with the picture. In this wiring, you only need to connect the voltage outputs of the device to the transformer and the inputs of the device. To measure the voltage, open signal view before beginning the test so that you can view the voltage signal, "Actual Current" and the voltage measured by the binary inputs of the device during the test. By selecting the related row and pressing "Apply Test", the necessary hardware and software changes are applied automatically and the test starts. Note that if "Start Test" option is selected instead of "Apply Test", the test will not begin.

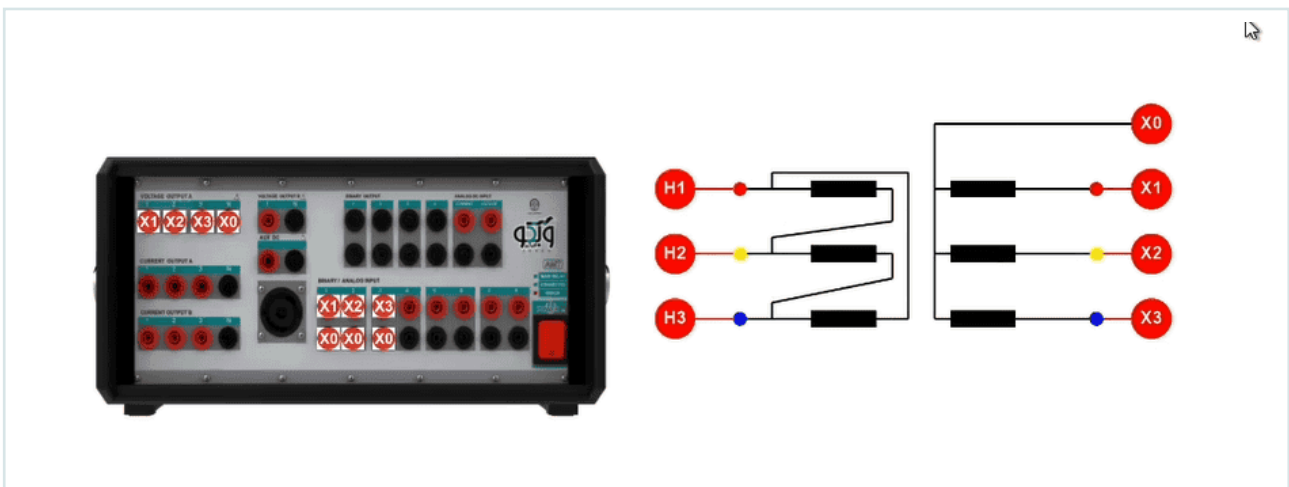


Figure 9

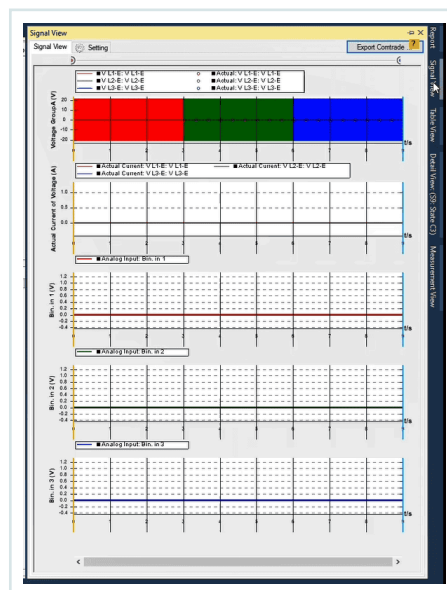


Figure 10



Figure 11

In the end after the test is finished, it is necessary to add the results of the evaluation to the report, which is done by selecting "Add to Report". In addition, if you wish to add specific parts of the evaluation to the report, edit, or delete the report, you can use "Add to Report" cog. By clicking on this cog, you can see that the elements, which can be added to the report, are displayed with a checkmark and it is possible to uncheck any of them that you do not need in your report. Note that after finishing every test, the results are not added to the report automatically and it is a necessity to add the test results to the output report by pressing "Add to Report" before "Clearing the Test" and after performing a test.

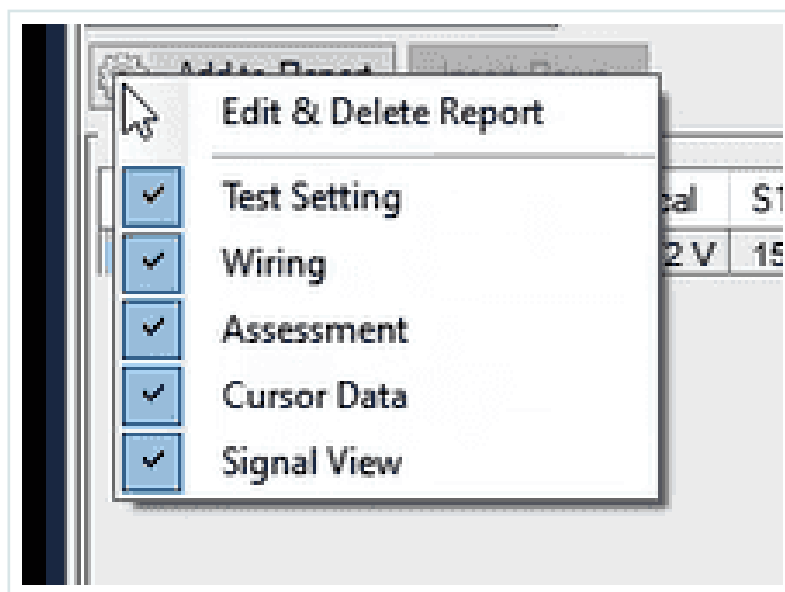


Figure 12

In performing this test, it is vital to consider some points: the first point is that "Error Other" in performing the test means that there is a problem in connection of the wirings and the null point of the device is connected to its phase. The second point is that if "Error Power" appears during performing a test, it means that too much current is drawn from the voltage phases and you need to decrease the test voltage to resolve this issue.

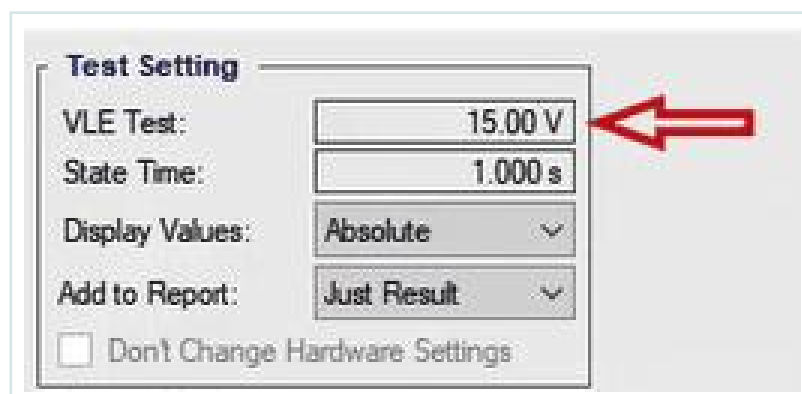


Figure 13

Test Setting

VLE Test:

15.00 V

State Time:

1.000 s

Display Values:

Absolute ▾

Add to Report:

Just Result ▾

☒

Don't Change Hardware Settings

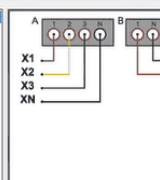
Insert Mode

Figure 14

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

Voltage Output

- 4x150V, 60VA @ 400mAms
- 1x150V, 120VA @ 800mAms (A1)
- 1x150V, 120VA @ 800mAms (A2)
- 1x150V, 120VA @ 800mAms (A3)
- 1x300V, 120VA @ 400mAms (A1 A2)
- 1x300V, 120VA @ 400mAms (A1 A3)
- 1x300V, 120VA @ 400mAms (A2 A3)
- 1x450V, 200VA @ 400mAms (A1 A2 B1)
- 1x450V, 200VA @ 400mAms (A1 A3 B1)
- 1x450V, 200VA @ 400mAms (A2 A3 B1)
- Not Used



Other

1 : X1	2 : X2	3 : X3	4 : Y1
1, 2, 3	**4, 2, 3		
1	**1, 4, 3		
2	**1, 2, 4		
3			
4			
1, 2, 3, 4	** Xn must be Connect to Yn		

Current Output

- 2x32A, 200VA @ 32A, 6Vrms, 5A, 24Vrms (A1A2, B1B3)
- 2x32A, 200VA @ 32A, 6Vrms, 5A, 24Vrms (A1A2, B2B3)
- 2x32A, 200VA @ 32A, 6Vrms, 5A, 24Vrms (A1A3, B1B3)
- 2x32A, 200VA @ 32A, 6Vrms, 5A, 24Vrms (A2A3, B2B3)
- 1x32A, 400VA @ 32A, 12Vrms, 5A, 48Vrms (A2B2)
- 1x32A, 400VA @ 32A, 12Vrms, 5A, 48Vrms (A2B2)
- 1x32A, 400VA @ 32A, 12Vrms, 5A, 48Vrms (A2B2)
- 1x32A, 400VA @ 32A, 12Vrms, 5A, 48Vrms (A3B3)
- 1x32A, 400VA @ 32A, 12Vrms, 5A, 48Vrms (A3B3)
- 1x32A, 400VA @ 32A, 12Vrms, 5A, 48Vrms (A3B3)
- 1x32A, 400VA @ 32A, 12Vrms, 5A, 48Vrms (A3B3)
- 1x32A, 400VA @ 32A, 12Vrms, 5A, 48Vrms (A1B1)
- 1x32A, 400VA @ 32A, 12Vrms, 5A, 48Vrms (A1B1)
- 1x128A, 400VA @ 128A, 3Vrms, 30A, 12Vrms
- Not Used

Voltage Output Signal

	Output Target	Output Label	Actual
X1	Not Used	Not Used	False
X2	V L2-E	V L2-E	True
X3	V L3-E	V L3-E	True
Y1	V L1-E	V L1-E	False

Current Output Signal

	Output Target	Output Label	Actual

Import ...
Export ...
OK
Cancel

Figure 15

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

Binary / Analog Input

Binary Input Target	Binary Input Label	Binary Input Type	Threshold	Reverse	Show Actual Value	Show Result	Apply VDC	Description
Set all Binary like this		Int Max 180 VV	False	AC	False			
Cut		Int Max 180 VV	False	AC	False			
False								
08 Not Used								
07 Not Used								
06 Not Used								
05 Not Used								
04 Not Used								
03 Not Used								
02 Not Used								
01 Not Used								

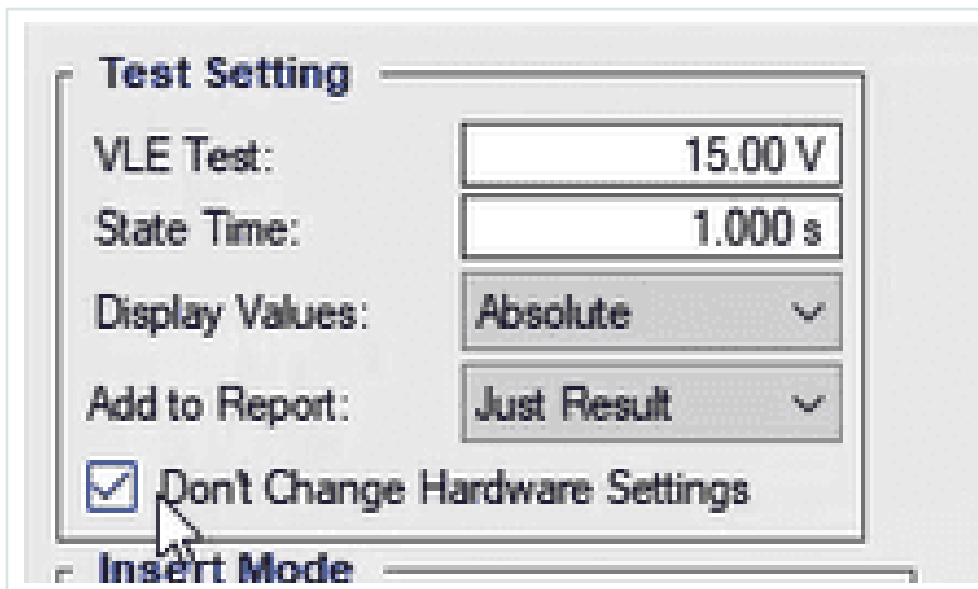
Virtual Binary Input

Virtual 1
Virtual 2
Virtual 3

Import ...
Export ...
OK
Cancel

Figure 16

[jg1]Magnetic_Balance_Test



Test Setting

VLE Test: 15.00 V

State Time: 1.000 s

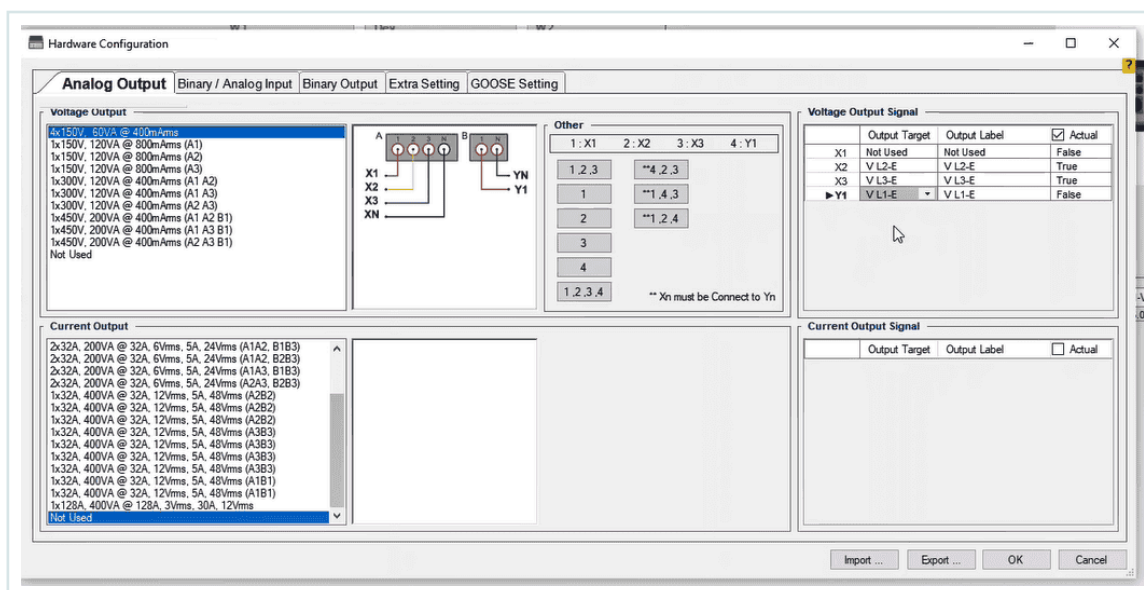
Display Values: Absolute

Add to Report: Just Result

☒ Don't Change Hardware Settings

Insert Mode

Figure 17



Hardware Configuration

Binary / Analog Input Binary Output Extra Setting GOOSE Setting

Analog Output

Voltage Output

- 1x150V, 120VA @ 800mAms (A1)
- 1x150V, 120VA @ 800mAms (A2)
- 1x150V, 120VA @ 800mAms (A3)
- 1x300V, 120VA @ 400mAms (A1 A2)
- 1x300V, 120VA @ 400mAms (A1 A3)
- 1x300V, 120VA @ 400mAms (A2 A3)
- 1x450V, 200VA @ 400mAms (A1 A2 B1)
- 1x450V, 200VA @ 400mAms (A1 A3 B1)
- 1x450V, 200VA @ 400mAms (A2 A3 B1)
- Not Used

Current Output

- 2x32A, 200VA @ 32A, 6Vrms, 5A, 24Vrms (A1A2, B1B3)
- 2x32A, 200VA @ 32A, 6Vrms, 5A, 24Vrms (A1A2, B2B3)
- 2x32A, 200VA @ 32A, 6Vrms, 5A, 24Vrms (A1A3, B1B3)
- 2x32A, 200VA @ 32A, 6Vrms, 5A, 24Vrms (A2A3, B2B3)
- 1x32A, 400VA @ 32A, 12Vrms, 5A, 48Vrms (A2B2)
- 1x32A, 400VA @ 32A, 12Vrms, 5A, 48Vrms (A2B3)
- 1x32A, 400VA @ 32A, 12Vrms, 5A, 48Vrms (A3B3)
- 1x32A, 400VA @ 32A, 12Vrms, 5A, 48Vrms (A3B2)
- 1x32A, 400VA @ 32A, 12Vrms, 5A, 48Vrms (A3B1)
- 1x32A, 400VA @ 32A, 12Vrms, 5A, 48Vrms (A1B1)
- 1x32A, 400VA @ 32A, 12Vrms, 5A, 48Vrms (A1B2)
- 1x32A, 400VA @ 32A, 12Vrms, 5A, 48Vrms (A1B3)
- 1x128A, 400VA @ 128A, 3Vrms, 30A, 12Vrms
- Not Used

Other

1: X1 2: X2 3: X3 4: Y1

1, 2, 3 **4, 2, 3

1 **1, 4, 3

2 **1, 2, 4

3

4

1, 2, 3, 4 ** Xn must be Connect to Yn

Voltage Output Signal

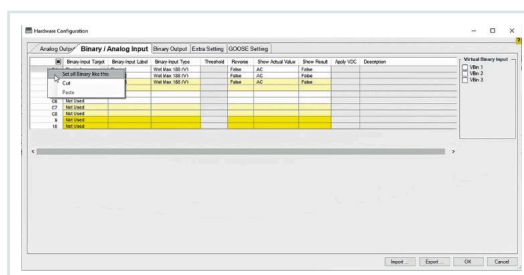
Output Target	Output Label	Actual
X1	Not Used	False
X2	V L2-E	True
X3	V L3-E	True
Y1	V L1-E	False

Current Output Signal

Output Target	Output Label	Actual

Import ... Export ... OK Cancel

Figure 18



Hardware Configuration

Binary / Analog Input Binary Output Extra Setting GOOSE Setting

Binary / Analog Input

Binary Input Target	Binary Input Label	Binary Input Type	Threshold	Reverse	Show Actual Value	Show Read	Apply OCC	Description
0	0	0	0	0	0	0	0	0
1	1	1	1	1	1	1	1	1
2	2	2	2	2	2	2	2	2
3	3	3	3	3	3	3	3	3
4	4	4	4	4	4	4	4	4
5	5	5	5	5	5	5	5	5
6	6	6	6	6	6	6	6	6
7	7	7	7	7	7	7	7	7
8	8	8	8	8	8	8	8	8
9	9	9	9	9	9	9	9	9
10	10	10	10	10	10	10	10	10
11	11	11	11	11	11	11	11	11
12	12	12	12	12	12	12	12	12
13	13	13	13	13	13	13	13	13
14	14	14	14	14	14	14	14	14
15	15	15	15	15	15	15	15	15
16	16	16	16	16	16	16	16	16
17	17	17	17	17	17	17	17	17
18	18	18	18	18	18	18	18	18
19	19	19	19	19	19	19	19	19
20	20	20	20	20	20	20	20	20
21	21	21	21	21	21	21	21	21
22	22	22	22	22	22	22	22	22
23	23	23	23	23	23	23	23	23
24	24	24	24	24	24	24	24	24
25	25	25	25	25	25	25	25	25
26	26	26	26	26	26	26	26	26
27	27	27	27	27	27	27	27	27
28	28	28	28	28	28	28	28	28
29	29	29	29	29	29	29	29	29
30	30	30	30	30	30	30	30	30
31	31	31	31	31	31	31	31	31

Import ... Export ... OK Cancel



Figure 19