



VEBKO ONLINE HELP

“Tracking” State

Category	tester
Section	AMT Sequencer Module
Language	English
Generated	2026-10-18

In "State Type: Tracking", power swing test or "power swing blocking" of distance relays is done. Power swing protection or "power swing blocking" is performed at the level of power transmission network. In order to conduct "Power Swing Blocking" test, after selecting "State Type: Tracking", the "Impedance View" window should be opened to display the impedance characteristic of relay, because in vebko software, this test is conducted by impedance characteristic.

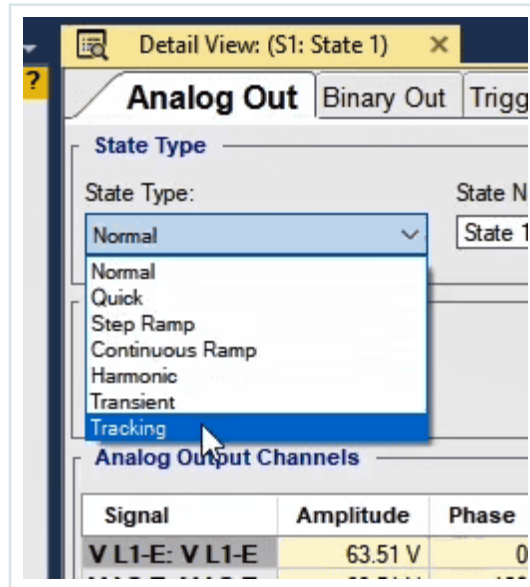


Figure 1

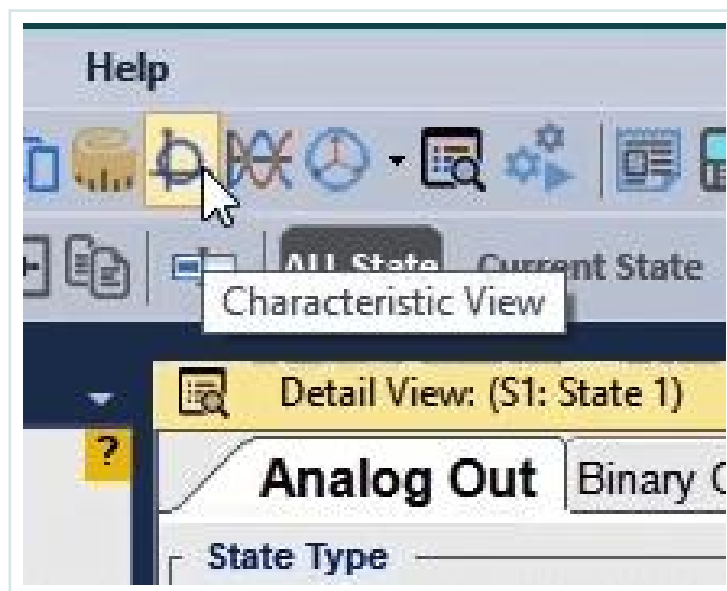


Figure 2

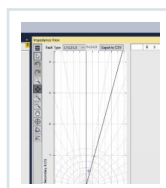


Figure 3

The power swing blocking test is usually conducted in three-phase fault and "Z-I const." mode. That is why in "Fault Type" field, the fault type has been selected to be "L1-L2-L3" by default. In "Z-I const." mode, the test current is constant and different voltages are generated to create fault impedance. "Analog Output Channels" table data have been created based on this "Set mode". The values of voltage and output current from these data are calculated by software and displayed in "Table View" and adjusted by the device. It should be noted that in "State Type: Tracking" state, the "Analog Output Channel" table is "Read Only" and no value can be changed to the table.

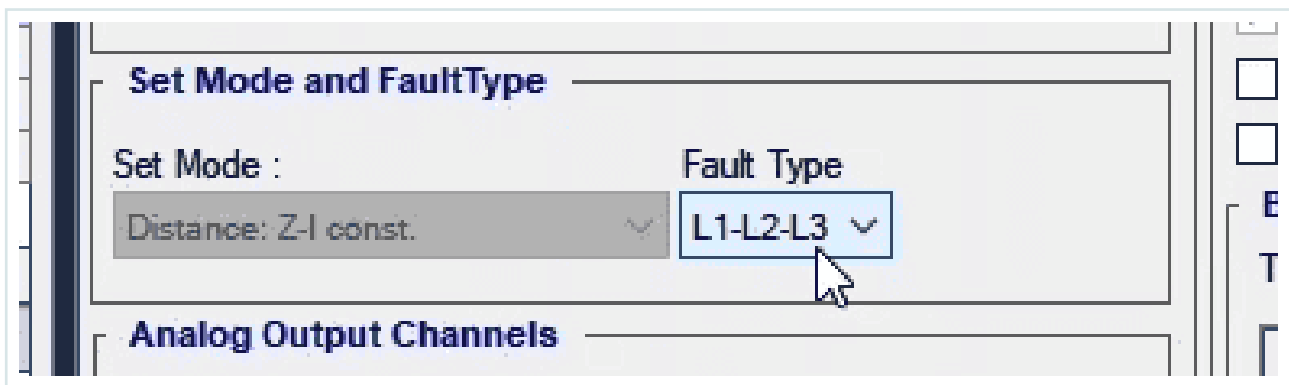


Figure 4

1 Entering Relay Data

At the beginning of this test, data related to distance relay should be entered into the software so that their impedance characteristic can be displayed in "Impedance View". To this purpose, click on "Test Object"; by selecting "Import from list" icon, "XRio Converter" file for distance relay "P441" is loaded.

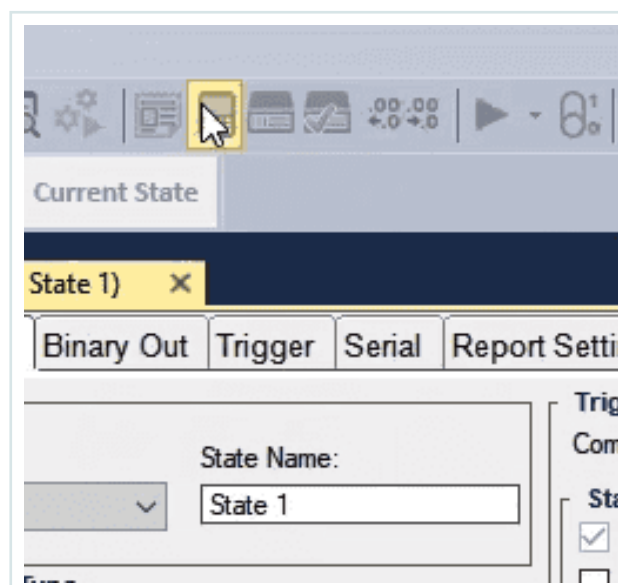


Figure 5

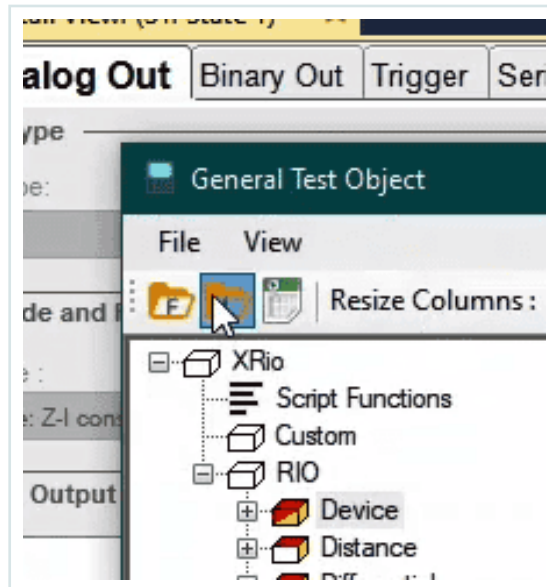


Figure 6

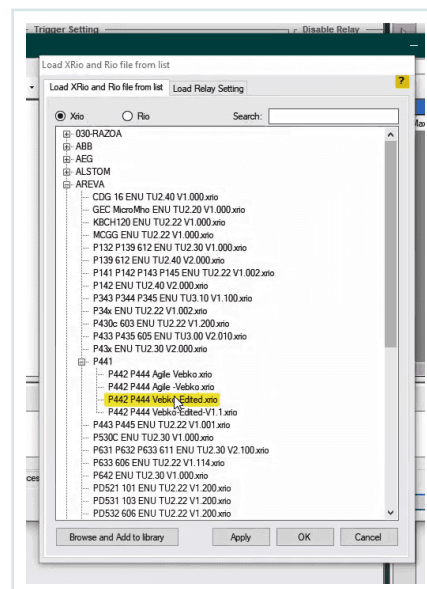


Figure 7

Then in "File" menu, select "Load Relay Setting" option, and in the opened window of "XRio" file, select distance relay "P441". By unchecking the options in "Matching Algorithm" part, which was previously described, "XRio" file is loaded. Upon clicking on the "OK" option, the relay impedance characteristic is displayed in the "Impedance View" window.

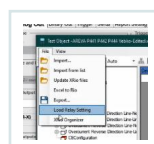


Figure 8

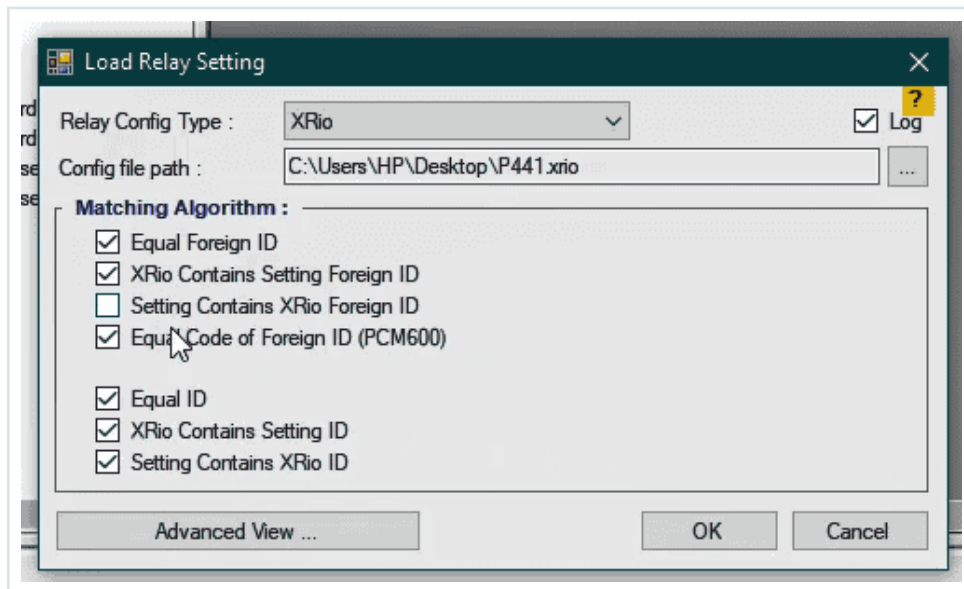


Figure 9

2 Impedance View Window

The power swing blocking test is conducted based on the impedance characteristic. In this test, the impedance observed by the relay enters the tripping zone from a zone out of the characteristic curve (No Tripping Zone) and exits rapidly; in this case, the relay must "block" its trip. There is a table next to the impedance characteristic curve in "Impedance View". This table can be used to enter power swing blocking test data.

	R	X	ITest	t nom	Num.Step
	-36.83 Ω	37.64 Ω	2.000 A	0.000 s	0
	-16.27 Ω	33.60 Ω	2.000 A	0.000 s	0
	-27.28 Ω	51.59 Ω	2.000 A	0.000 s	0

Figure 10

In order to conduct this test, one point outside the characteristic curve, one point inside the characteristic curve, and again one point outside the characteristic curve should be added. After the points are added in the characteristic curve, it is observed that a row has been added to the right table per point. In the "Num.Step" column of this table, the number of points are entered between the previous point and the selected point and depicted in the impedance characteristic curve.

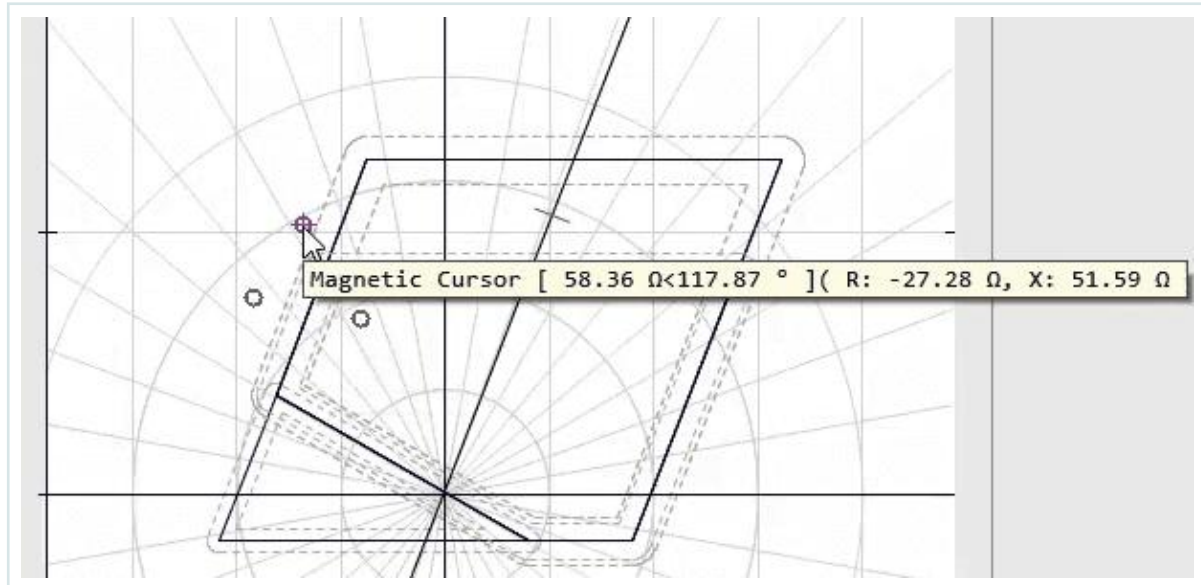


Figure 11

						?
	R	X	I Test	t nom	Num.Step	
	-36.83 Ω	37.64 Ω	2.000 A	0.000 s	0	?
	-16.27 Ω	33.60 Ω	2.000 A	0.000 s	0	
▶	-27.28 Ω	51.59 Ω	2.000 A	0.000 s	0	

Min: 0 , Max: 200
Shown Value: 0 , MainValue: 0

Figure 12

In "t nom" column, the total time of voltage and current injection corresponding to these are entered. In "I test" column, the injection current of these points are determined. Considering that the injection

is in the form of constant current, the current of all points is constant. The real and imaginary values of the selected point have been entered in "R" and "X" columns, respectively. . Once the table data of this test are completed, this test is ready to be executed and upon clicking "Start" option, the test is conducted.

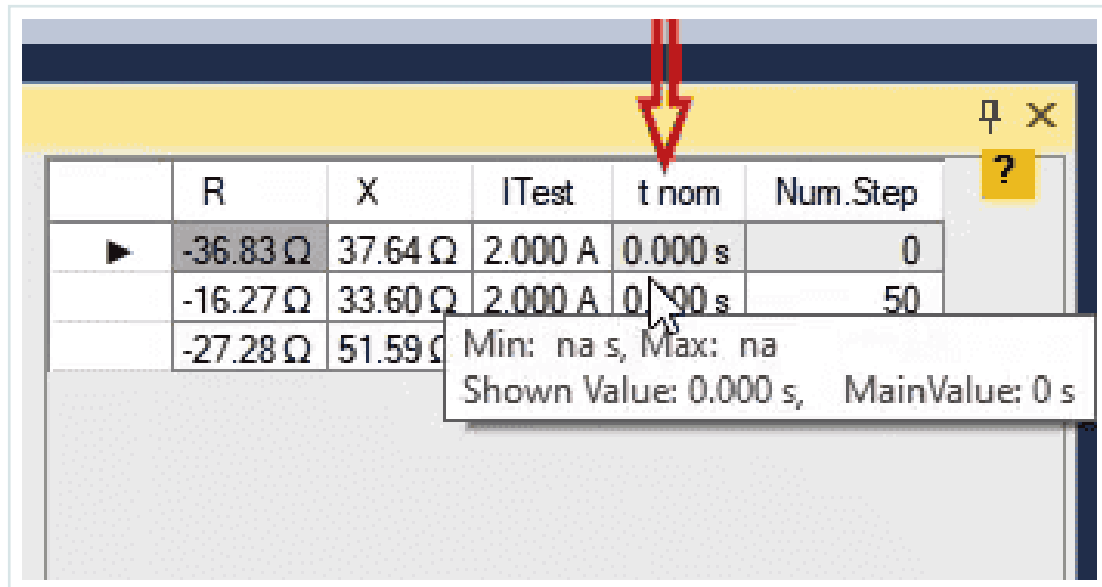


Figure 13

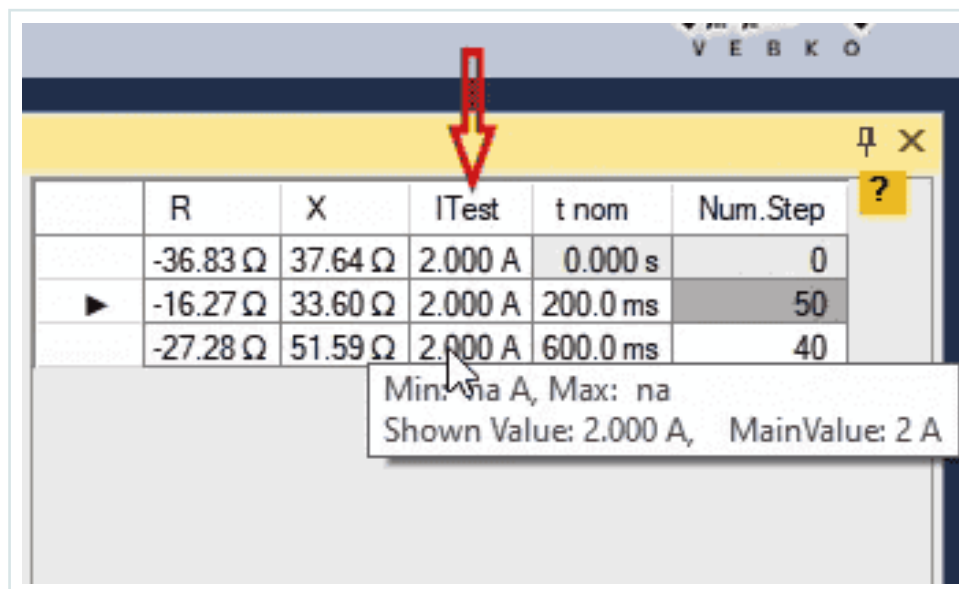


Figure 14

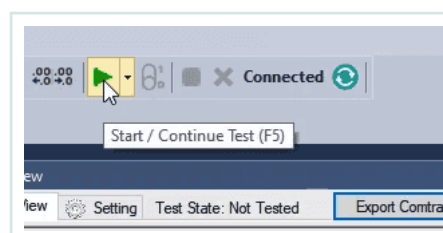




Figure 15

[jg1]Tracking_state