



VEBKO ONLINE HELP

Introducing “Testview” Window in “Distance” Room, Part 1

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Section	AMT Distance Module
Language	English
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As mentioned before, one of the windows of "Distance" room is "Test View". This window consists of 6 tabs of "Shot Test", "Check Test", "Search Test", "Setting", "Trigger" and "Binary Output". In "Shot Test" tab, it is possible to specify fault type and test point and after performing the test, you can view the results of the evaluation. In "Test Point" section in this tab, the test point can be specified using two methods: first, the impedance magnitude is entered in "IZI" field in terms of ohm and in "Phi" field the impedance angle is entered in terms of degree. Then, by clicking on "Add" the values are entered and the software displays the real and imaginary values of this impedance in "R" and "X" fields respectively. In the second method, it is possible to directly enter the real and imaginary values in "R" and "X" fields and by selecting "Add" select your intended point. If you wish to enter your test points in terms of a percentage of length of the line, you should use "%" field.

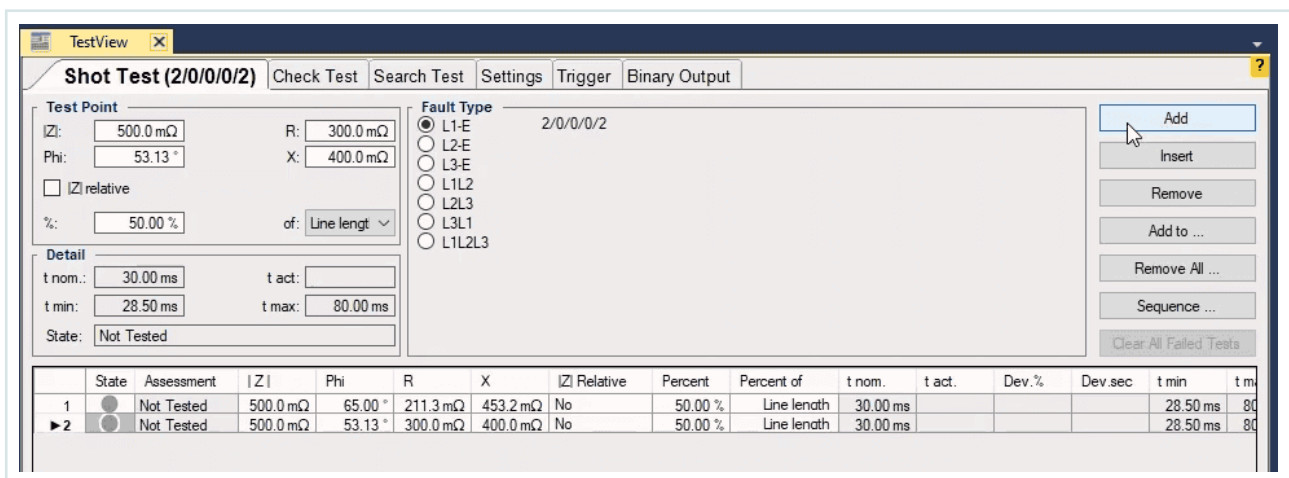


Figure 1

By checking "Z Relative" option, the test point is made dependent on the length of the line and recorded in the table. By changing the length of the line from 1 to 3 ohms, in "Test Object" section, in "Distance Parameters" window in "System Settings", the entered impedance value is changed in accordance with the length of the line. But, if this option is not checked, by changing the length of the line, the entered values in the table do not change. In fact, each test point consists of three "States" which simulate "Prefault", "Fault" and "Post Fault" states. By default, in "Prefault", "Fault" and "Post Fault", nominal voltage and 0 current, 0 voltage and current and voltage and a current based on the test point are injected respectively. To change "Prefault" and "Post Fault" states you should use "Setting" tab and "Time" section. More explanation about this section will be provided in "Setting" videos. Just note that if PT connection is wired, as at busbar, in "Post Fault" the zero current and nominal voltage will be available.

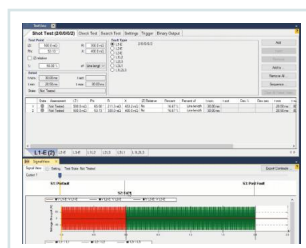


Figure 2

The Fault Type is specified in "Fault Type" section. These Faults include phase to ground, two-phase and three-phase faults. Before specifying the fault type and fault current, it is necessary to select the test model from among Constance test current, Constance test voltage and Constance source impedance. In Constance test current model the injection current is fixed and the voltage changes in accordance with the test impedance. In Constance test voltage model, the test voltage is fixed and the fault current changes in accordance with the test impedance. In Constance source impedance method, the source impedance includes the impedance from the origin to fault plus the impedance of ground to the fault point, angle and the grounding factor.

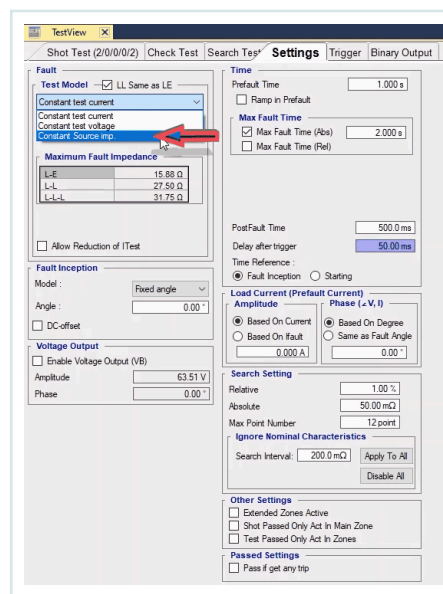


Figure 3

By selecting "Add", the selected test point is added to the table in this window. By selecting any of the rows and clicking on "Insert" option, the selected row is repeated in the table and by clicking on "Remove", the selected point is removed. By selecting "Add to" option, it is possible to copy the point or points selected for one of the "Fault Types" to another "Fault Type". By selecting "Remove All" option, it is possible to remove all of the test points added to the table. By clicking on "Sequence" option, "Sequence Test Points To" page opens where it is possible to create test points with equal steps. By selecting "Angle" in "Step On" field in "Step" section, the angular steps are directly entered in terms of degrees.

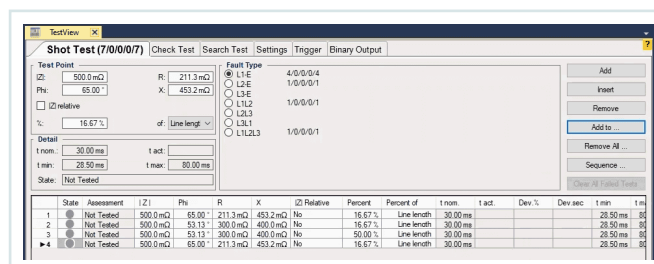


Figure 4

This means that the test points are specified according to the "Origin" point entered in "Origin" section in a way that the required angles resulted in proportion to the horizon. For example if the start and end angles equal "45" and "90" degrees with "5" degrees as their steps and the origin points are entered for "Z" and "Phi" or "R" and "X", after selecting "5" ohms as impedance and "36" degrees as the origin and by applying this settings, you can see that multiple points are added on the "Impedance View". For example the last point is selected; you can see that the resulted angle is "85" degrees not "90" degrees. This happens because the "Origin" point is also considered as one of the points.

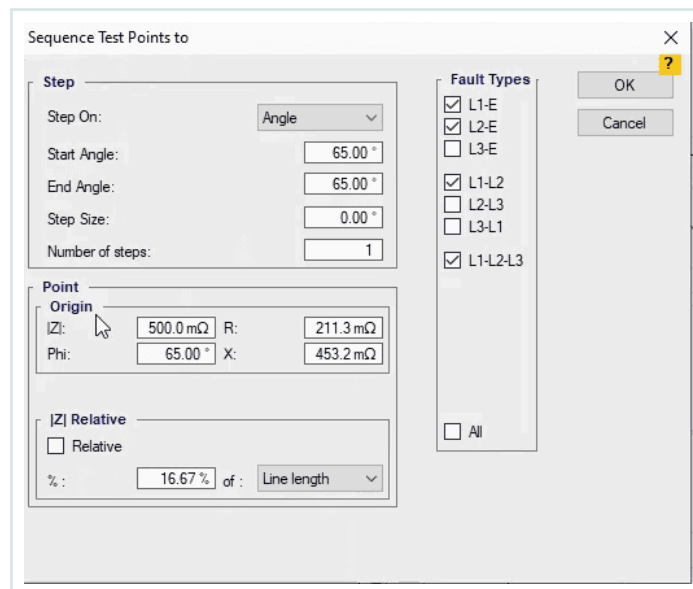


Figure 5

But by selecting "Direction", an "angle" is specified in "Angle" field where from the "Origin" point with the length entered in "Length" field and with steps specified in "Step Size", some points are shot on the characteristic curve. Note that the length and the steps of the points are in terms of ohm. For example if the angle is "45" degrees, the length is "5", the step size is "0.5" ohm and the origin point is "0" ohm, by applying this settings you can see that some points are created in "45" degrees with "0" origin in "Impedance View". Note that in both states of "Angle" and "Direction", it is possible to make the origin dependent on the length of the line and specify it in form of a percentage of it in "Z Relative" section.

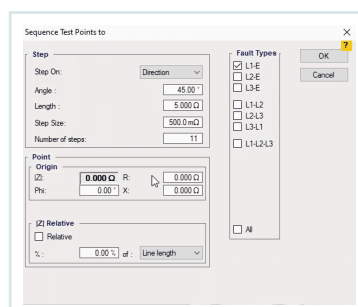


Figure 6

If the performed test has "Failed" points, by selecting "Clear All Failed Tests" option, it is possible to clear the results of all these points. In "Detail" section, the information related to "Trip" nominal time, the allowed operation time range, actual time and test point evaluation are entered in "T nom", "T min", "T max", "T act" and "State" fields respectively. The test points are entered with detail in the table at the bottom of the page. The details include test evaluation, test current, nominal time, operation time, fault value in terms of percent and seconds and the minimum and maximum operation time. Also, if you wish to add a comment about any of the test points, you can use the "User Comment" cell. At the bottom of this page, it is possible to select test points table from different "Fault Types". To test, a point is shot in "L1-E" "Fault Type". By using "Add to" option, this point is also added to "L1L2" and "L1L2L3" "Fault Types". Note that if "L1-E" option remains checked, the point added for the "L1-E" "Fault Type" will be repeated in this "Fault Type". Then, open the "Signal View" window and run the test. You can see how the voltage and current signals are injected for every test point. After testing each point, its evaluation is recorded in the table as well as the "Impedance View".

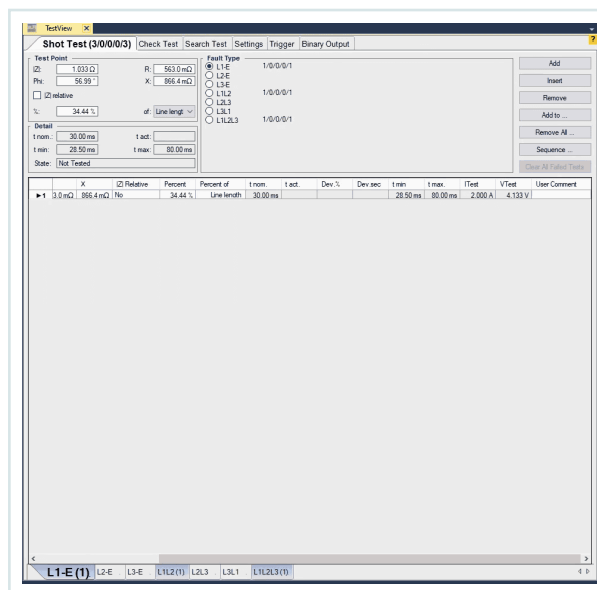


Figure 7

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