



VEBKO ONLINE HELP

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# Under Over Voltage Test Room

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| Category  | <b>tester</b>                      |
| Section   | <b>Under OverVoltage Test Room</b> |
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## 1 Imported Content

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On the start page of the software, by clicking on "Under Over Voltage Test" from „Special Test“ subcategory, enter the environment related to testing numbers 27 and 59 voltage functions. This room is designed to simplify testing the mentioned functions and create various states automatically.

„Under Over Voltage Test“ room is composed of six main windows of „Instrument Test“, „Detail View“, „Signal View“, „Table View“, Report“ and „Measurement View“ and for a better analysis and examination, it is possible to add other windows such as „Vector View“ from the menu at the top.

To begin, different information such as relay type, serial number, station name, feeder/be number and the name of the device manufacturer must be entered in „Test Object“ section. The date of performing the test in AD,

the information of the performer of the test and the information of the supervisor of the test are entered in „Date“, „Tested by“ and „Approved by“ fields, respectively. This information will be used in the final report.

In „Test Settings“ section, the intended function is selected from among „OV“ and „UV“ in „Function Type“ field. Also, the secondary nominal voltage and the operation mode are selected from among OR and AND in „Vnom sec“ and „Operation mode“ fields, respectively.

If the mentioned functions need a current value to operate, such as „Minimum Current“ element, it is possible to check „Enable Current“ option and select the necessary current value.

If the intended connection of the user is open delta connection, they can check „Open Delta“ option.

Every time „Insert Row“ is pressed a row in „Data Table“ is created in accordance with the number of voltage stages entered in the relay to enter the information of every Stage.

In the created row, the stage number is entered in „Stage No“ and in „V setting“ section, the amount of the voltage setting for the mentioned functions is entered.

In „Voltage Type“ section, the voltage calculation algorithm is specified which can be in form of phase to earth or phase to phase.

Also, the time settings are entered in „Time Setting“ section.

„Reset Ratio“ is the reference considered for measuring the amount of reset voltage,

„Tol.Time“ is the amount of the accepted time error in form of percentage

and „Tol.Voltage“ determines the amount of the accepted voltage error in the result of the test.

The settings related to „States“, „Binaries“, Pickup“ and „Dropoff“ are entered in „Testing“ tab.

Also, it is possible to specify the voltage change condition from among „Continuous Ramp“ and „Step Ramp“ in „State Type“ section.

In „State Pickup/Drop Out Termination“ section, the condition for ending the pickup and dropoff is selected in form of a separate contact such as C2 or pressing Space key at the same time as the LED turns on or the Trip contact.

The conditions for recording the Trip is specified in „State Trip Termination“ section.

Also, it is possible to consider a different binary input for recording pickup-dropoff or trip in „Hardware Configuration“ section.

By pressing „Add Row“ key in „Test Plan“ section, new rows are added for the test in accordance with the stages created in „Test Object“. If „Continuous Ramp“ option is checked in „State Type“ section, the settings are as follows:

In „Stage No“ section, it is possible to specify the stage number of the function operation. In „Fault Type“ section,

the fault type for every phase or a combination of phases is selected.

In „Time Test“ section, it is specified that whether the user wishes the voltage function operation time to be estimated or not.

In „Vtest“ section, the voltage in which the relay operation time is going to be examined is entered.

In „PU Test“ and „DOU Test“ sections it is specified that whether the user wishes to perform these two tests or not.

In „PU Val. Assess“ section, the evaluated value from the pickup voltage is entered

and in „PU Start“ section, the start point of the voltage test is specified.

„PU End“ and „DOU End“ stand for the final voltage value in the pickup and dropoff, respectively.

In „Total“ section, the time duration considered for every pickup or out dropoff state is entered. The longer this time, the more continuous paces.

If „Step Ramp“ option is selected in „State Type“ section, instead of „Total“ column, „dt (PU)“ which is the time duration considered for every voltage change pace in pickup states, „du(DOU)“ which is the

time duration considered for every voltage change pace in dropoff states and „dv“ which is the amount of the voltage change paces are specified.

After entering the mentioned values, by clicking on „Init Test“, the user can view the states that are created in „Table View“, and in „Measurement View“, in „Time Assessment“ and „Ramp Assessment“ windows, see that the values are entered as the test result evaluation. It should be noted that by selecting any State and pressing the middle button of the mouse, the user can view the details related to that state.

As an example, here an overvoltage function with 76 volts as the setting, and 4 seconds as the time setting in Micom P141 relay is tested.

After applying the necessary settings in the relay, the configuration is specified as it can be seen.

For this purpose, LEDs 1 and 4 of the relay are configured to show the pickup and the trip of this function, respectively.

In the output contacts section, R4 is specified as the contact for recording the pickup. Moreover, R6 output contact in the relay is configured as a trip contact.

To run the test, by opening a new window in „Over/Unver Voltage“ room and after entering the primary information such as the relay type, serial number, station name, feeder/be name and the manufacturer company, as an example, function OV is selected and the secondary voltage is set at 110 volts and OR is selected as the operation mode so that the results are recorded with pickup or trip of any of the phases. Since here there is no need for current injection, Enable Current option is not enabled. Also, since here open delta connection is not the case, Open Delta option is not selected either.

In Data Table, stage 1 is selected and the voltage setting is set at 76 volts (the value specified in the relay) and LN is selected in Voltage Type section. The time setting of the relay is 4 seconds which is entered in Time Setting section.

Now by going to the State Setting in Testing section, Continuous Ramp option is selected. Here binary C2 and C1 are selected to record the pickup and drop and record the trip, respectively.

Since the purpose of the overvoltage element test is to test all three phases, Fault Type option is set at L1E L2E L3E. 80 volts is entered In Vtest section which is bigger than the voltage specified in the relay settings and the relay must give a trip in this voltage. Also, by selecting Yes in “PU Test” and “DOU Test” section, pickup test and drop out will be done. In PU Val.Assess section, the approximate estimation of the value expected for the pickup which is 75.5 is entered. The test voltage start value and the final voltage value for the pickup test are specified in PU Start and PU End sections, respectively. DOU End is the final voltage value for ending the dropout test. The total time is entered in Total section.

Now Init test button is pressed so that the states are created in „Table View“ in accordance with the entered information. After running the test, the results of the evaluation can be viewed in „Measurement View“ window, „Time Assessment“ and „Ramp Assessment“ tabs.

In the end, after running the test it is necessary to add the results to the report which is done by pressing „Add to Report“. Also, if you wish to add specific parts of the test to the report or delete or edit the report, you need to use “Add to Report” cog. By clicking on this cog, the items that can be added to the “Report” are displayed as checked checkboxes and if you wish any of them not to be added to the report, uncheck the intended checkbox. It should be noted that after doing the tests, the results are not automatically added to the report and after doing every test, it is necessary to manually add the results of the performed test to the output report by pressing “Add to Report” before Clearing the test.

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