

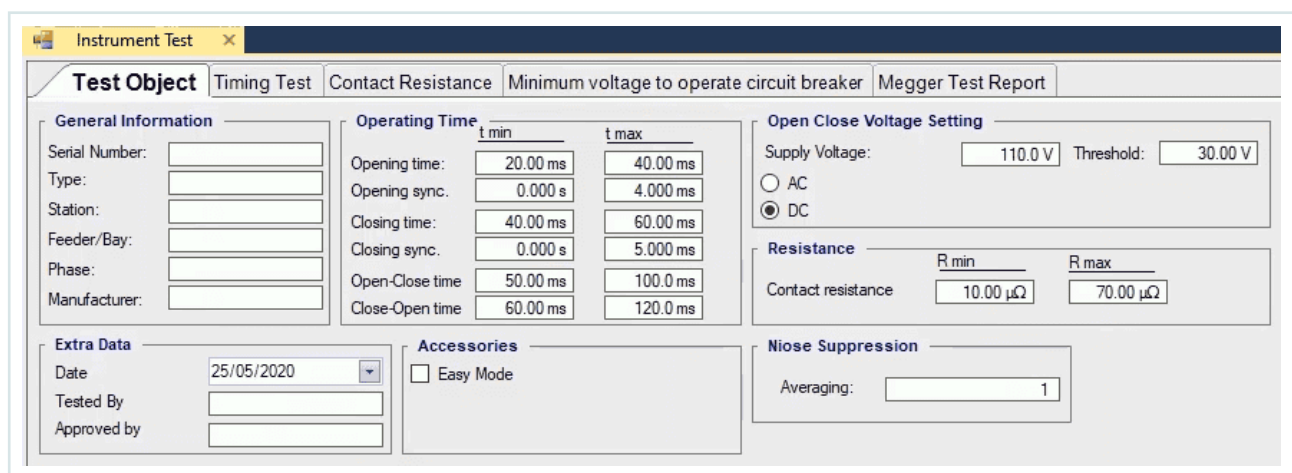


VEBKO ONLINE HELP

Introducing “Circuit Breaker(CB)” Room

Category	tester
Section	Circuit Breaker Module
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One of the Instrument which can be tested by an "AMT105" is "Circuit Breaker (CB)" with a maximum excitation current of "2.5" amps which is used to connect and disconnect lines and other high-voltage equipment. When a fault occurs in the equipment and lines, the CB automatically stops the faulty system. When there is a fault, the CB must be able to react with certainty and command automatically. The "AMT105" is capable of testing "Medium Voltage" CB with a maximum supply voltage of "210V" and "2.5amps" of "Coil Current". By clicking on "Circuit Breaker(CB)" on the "Start" page, the "CB" test room opens. In this room, by adjusting the required settings, it is possible to perform "CB Time Test", contact resistance and minimum voltage to operate test. "Test Object" and "Megger" tabs are used to enter the nominal information of "CB" and the results of "Megger" test respectively.



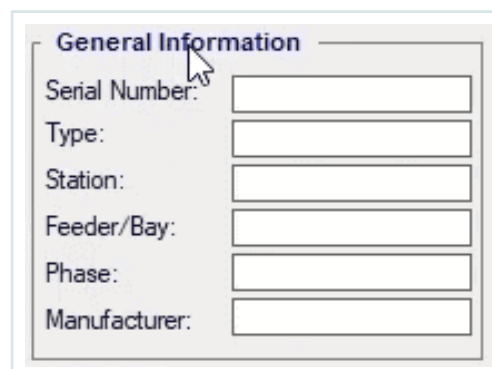
The screenshot shows the "Instrument Test" window with the "Test Object" tab selected. The interface is divided into several sections:

- General Information:** Fields for Serial Number, Type, Station, Feeder/Bay, Phase, and Manufacturer.
- Operating Time:** A table with columns for t min and t max. Rows include Opening time, Opening sync., Closing time, Closing sync., Open-Close time, and Close-Open time.
- Open Close Voltage Setting:** Fields for Supply Voltage (110.0 V) and Threshold (30.00 V), with radio buttons for AC and DC (selected).
- Resistance:** Fields for R min and R max, with a Contact resistance field set to 10.00 $\mu\Omega$ and 70.00 $\mu\Omega$.
- Extra Data:** Fields for Date (25/05/2020), Tested By, and Approved by.
- Accessories:** A checkbox for Easy Mode.
- Noise Suppression:** A field for Averaging set to 1.

Figure 1

1 "Test Object" tab:

Every room, to perform the test, needs some information about the equipment to be entered in "Test Object" tab. In "General Information" tab, information about the "CB" which should be added to the report is entered. In "Serial Number", "Type", "Station", "Feeder/Bay", "Phase" and "Manufacturer" fields, the serial number, type, name and address of the substation, feeder's name, phase number and the name of the manufacturer are entered.

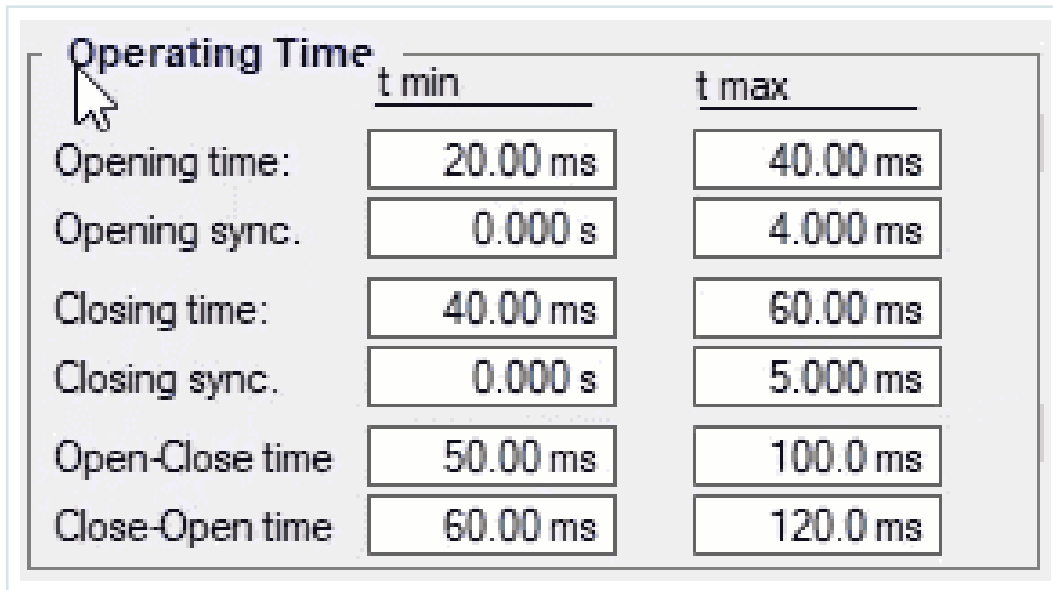


This close-up shows the "General Information" section of the "Test Object" tab. It includes the following fields:

- Serial Number:
- Type:
- Station:
- Feeder/Bay:
- Phase:
- Manufacturer:

Figure 2

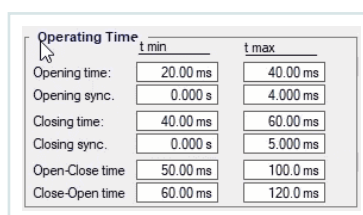
In "Operating Time" section, the minimum and maximum allowed times in different modes are entered. Since open command is sent to the "Breaker" bobbin, up to the moment the CB poles are detached is called "Opening Time" while since the "Close" command is sent, up to the moment the CB poles are closed is called "Closing Time" whose minimum and maximum allowed time should be entered in the related field. " T_{min} " and " T_{max} " fields in front of "Opening Sync" and "Closing Sync" determine the maximum allowed time difference between the opening of 3 poles and closing of 3 poles of the CB respectively.



	t min	t max
Opening time:	20.00 ms	40.00 ms
Opening sync.	0.000 s	4.000 ms
Closing time:	40.00 ms	60.00 ms
Closing sync.	0.000 s	5.000 ms
Open-Close time	50.00 ms	100.0 ms
Close-Open time	60.00 ms	120.0 ms

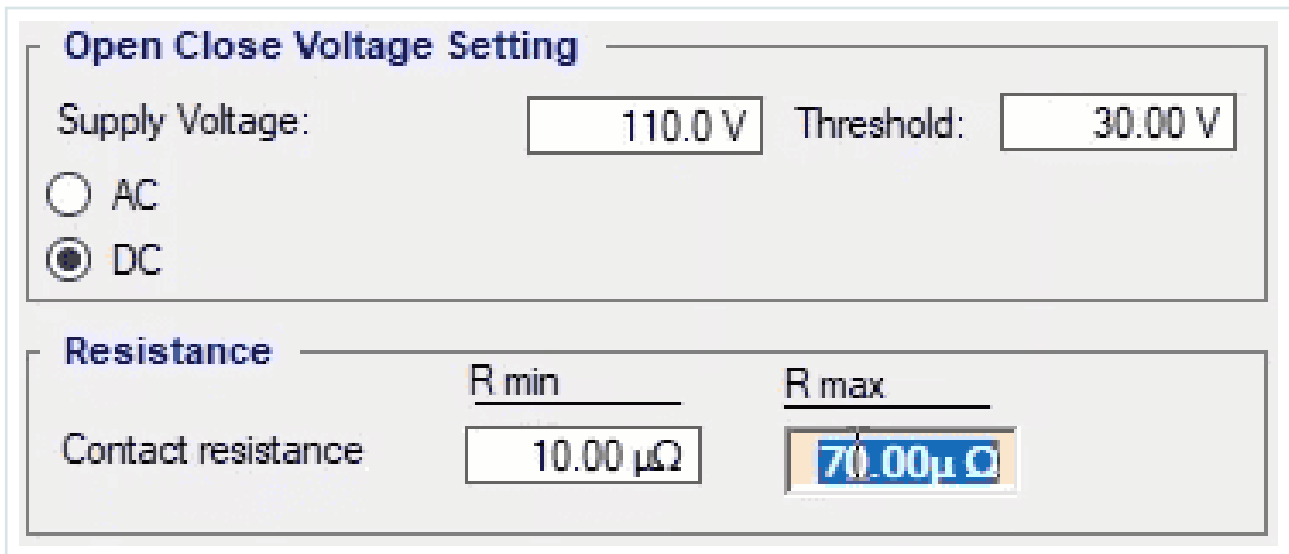
Figure 3

Since the "open" command is sent to the breaker, up to the moment the CB poles are closed again after opening once, is known as "Open-Close Time" and its minimum and maximum allowed times are entered in the related field. In "Open Close Voltage Setting" section, the amount of the open and close voltage of CB bobbins is selected from among "AC & DC". Also, in "Supply Voltage" and "Threshold" the amount of supply voltage and the threshold voltage to begin the measurement of the CB operation time are entered respectively. About "Threshold", note that, when the voltage of the binary 7 or 8 goes below the value specified in this field, the device starts measuring the time. In "Resistance Contact" field, the ideal resistance of the CB poles are specified and the minimum and maximum allowed are entered in front of it. All the information of "Test Object" tab is entered from "Test Sheet" or the results of the previous tests.



	t min	t max
Opening time:	20.00 ms	40.00 ms
Opening sync.	0.000 s	4.000 ms
Closing time:	40.00 ms	60.00 ms
Closing sync.	0.000 s	5.000 ms
Open-Close time	50.00 ms	100.0 ms
Close-Open time	60.00 ms	120.0 ms

Figure 4



Open Close Voltage Setting

Supply Voltage: Threshold:

☐ AC

☒ DC

Resistance

	R min	R max
Contact resistance	10.00 μΩ	70.00 μΩ

Figure 5

In "Extra Data" section, in "Date", "Tested By" and "Approved By" fields, date of the test, information of the test man, and information of the supervisor are entered respectively. By checking "Easy Mode" option in "Accessories" section, the wiring format of the tests changes. This wiring is in accordance with the board designed for "CB" test by VEBKO company; this board is connect on the front panel and there are relays placed on it that can manage the wiring automatically which makes the test easier. The number entered in "Averaging" field indicates the number of cycles which are used for doing the calculations. This number is set at 1 by default. The more the number of cycles, the more cycles and time are considered for calculations by the software in "AC" and "DC" modes respectively. Doing this increases the calculations which leads to a more accurate test result.



Extra Data

Date:

Tested By:

Approved by:

Accessories

☒ Easy Mode

Noise Suppression

Averaging:

Figure 6

By checking "Add to Report" option at the bottom of the page, this information is added to the report and the message "The report was added to the list" is displayed. It is possible to view the report by selecting "Report" from the strip at the right. By clicking on "Delete Report" in "Delete from Report" window, the report added is deleted. If "Set as default" is checked, the entered information is saved as default and by opening the "Circuit Breaker(CB)" room at any time, this information is displayed.

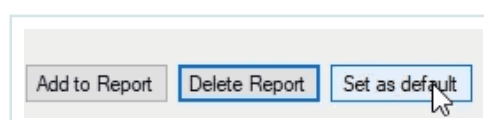




Figure 7

[jg1]Introducing_Circuit_Breaker_CB_Room