



# PME-500-TR

# Basic Performance Test

An EuroSMC® training paper

## INTRODUCTION

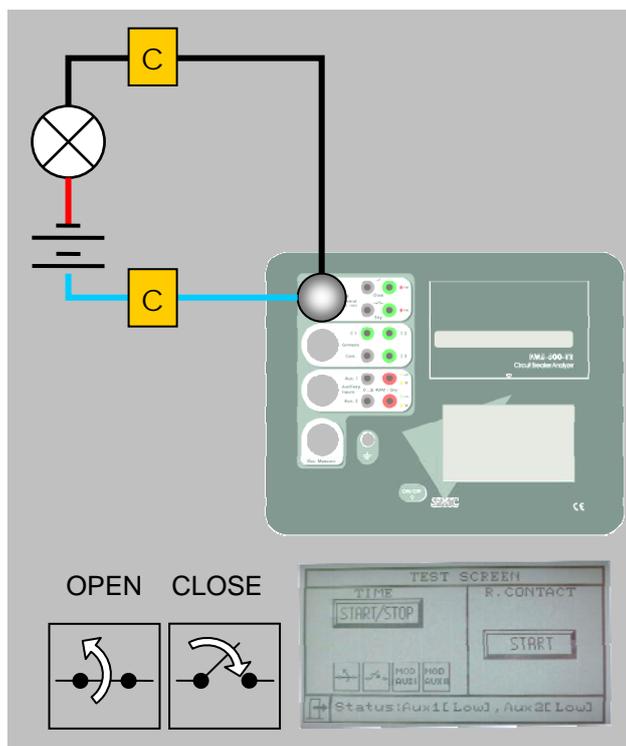
The PME-500-TR integrates measurement instruments and a number of test automation devices in a single piece of equipment designed for the evaluation and condition assessment of three-phase circuit breakers. This document describes a few simple procedures to ensure the correct operation of all the functions involved in the evaluation of a circuit breaker without doing an actual test. These procedures may help the user diagnose common problems quickly and, in most cases, provide a permanent solution with no need to return the equipment to a service centre. Measurement accuracy, however, falls beyond the scope of this guide, as it requires specific resources, knowledge, and environmental conditions only guaranteed by EuroSMC and authorized calibration laboratories.

We recommend you to conduct the following tests before contacting EuroSMC or your local service representative if you face trouble while using your PME-500-TR.

### Checking the coil control system

The coil control system consists basically of two solid-state on/off switches opening or closing the circuit that supplies power to the circuit breaker's operation coils. These 'switches' are sensitive to polarity, and can be operated manually by pressing the 'open' or 'close' buttons in the PME-500-TR's TEST menu. To check the coil control system for proper operation, you will need a small lamp, a suitable battery, a short section of conductor and a few simple steps:

1. Plug the coil control cable (black / blue leads labelled "C" and "T") into the Coil Control multi-connector.
2. Open the SET menu and set Duration to 1000 ms. for both Close and Open.
3. Connect the terminal labelled as "C" at the end of one of the blue leads to the battery's positive.
4. Connect the other terminal labelled as "C" (black lead) to one pole of the lamp.
5. Complete the circuit by connecting the other pole of the lamp to the battery's negative with your section of conductor. The lamp should NOT be lit.
6. Open the TEST menu and press the Manual Close button while observing the red On LED on the right of the black/green Close connectors. This LED and the connected lamp should be simultaneously lit for one second.
7. Repeat steps 2-6, this time using the "T" terminals and pressing the Manual Open button while observing the red On LED on the right of the black/green Open connectors.



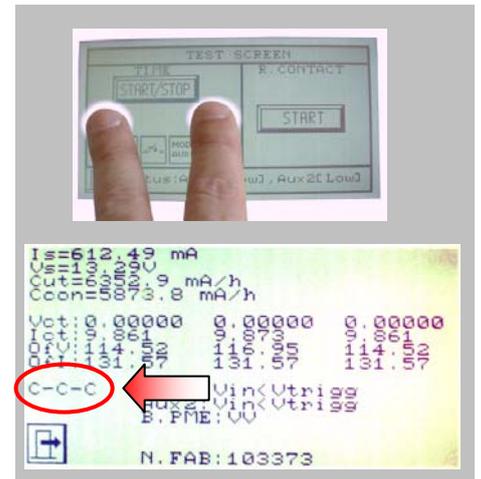
If you obtain different results check your cables for continuity and refer to the troubleshooting guide in the user's manual. There are internal fuses that might be blown.

### Checking the main contact state detection

The PME-500-TR determines the state (open or closed) of the circuit breaker's contacts by measuring the resistance between both sides. You can easily check your unit for proper recognition of open or close states by following these steps:

1. Plug the main contact timing cable into the Contacts multi-connector. This lead groups six leads with black / red 4-mm terminal pairs labelled C1, C2, and C3 respectively.

- Open the TEST screen and touch underneath the two lower corners of the START/STOP button. The Factory Measurements screen should be displayed. The signature “O-O-O” should be visible on the lower left, indicating that C1, C2 and C3 pairs are disconnected (Open).
- Interconnect the black and red terminals labelled as C1. The signature should change to “C-O-O” after a short while. Do not undo the connection yet.
- After doing the same with the C2 terminals, the signature should change to “C-C-O”
- Finish with the C3 terminals to display “C-C-C” and then undo the three connections successively while observing the display as it returns to “O-O-O”

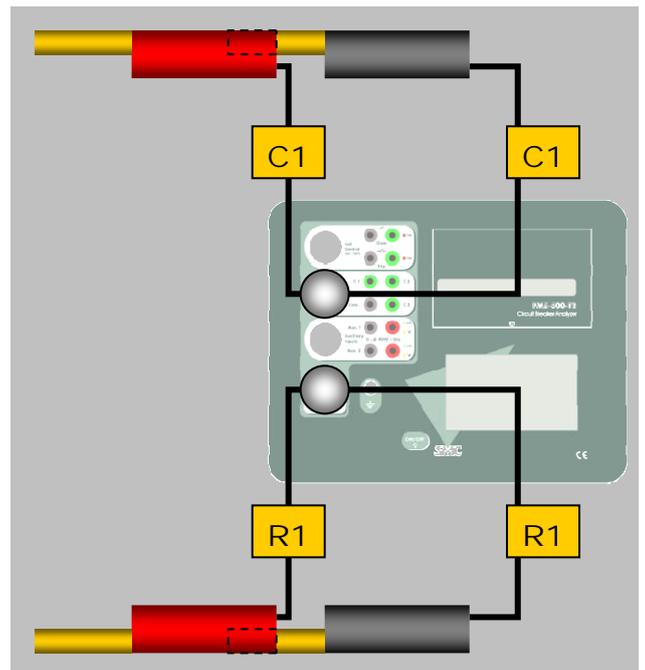


If you obtain different results, check your test leads for continuity and refer to the troubleshooting guide in the user’s manual. There are internal fuses that might be blown.

### Checking the contact resistance measurement

The PME-500-TR uses the four-wire method (Kelvin connection) to measure the resistance of the three closed poles in the circuit breaker. This is the simplest way to check the integrity of the resistance measurement system for the three phases:

- Ensure that the PME-500-TR’s battery holds some charge or leave the unit switched off and connected to an AC outlet to re-charge for at least 15 minutes. This test takes the power from the battery, even if the unit is connected to a mains AC outlet.
- Plug the main contact timing cable into the Contact multi-connector in the PME-500-TR (you may have it already connected after performing the procedure above)
- Plug the voltage measurement cable into the Res. Measure multi-connector.
- Interconnect the black and red terminals labelled as C1 at the free end of the Contact timing cable as shown in the figure.
- Do the same with pairs C2 and C3
- Do the same with pairs R1, R2, and R3 at the free end of the Res. Measure cable.
- Open the TEST menu and press the START button on the right. The PME-500-TR will measure the contact resistance of the three ‘poles’ and a “Test finished” message should be displayed after a short while.
- Exit the TEST menu and navigate the RES tab for the measured resistance values. The three values should be exactly ZERO.

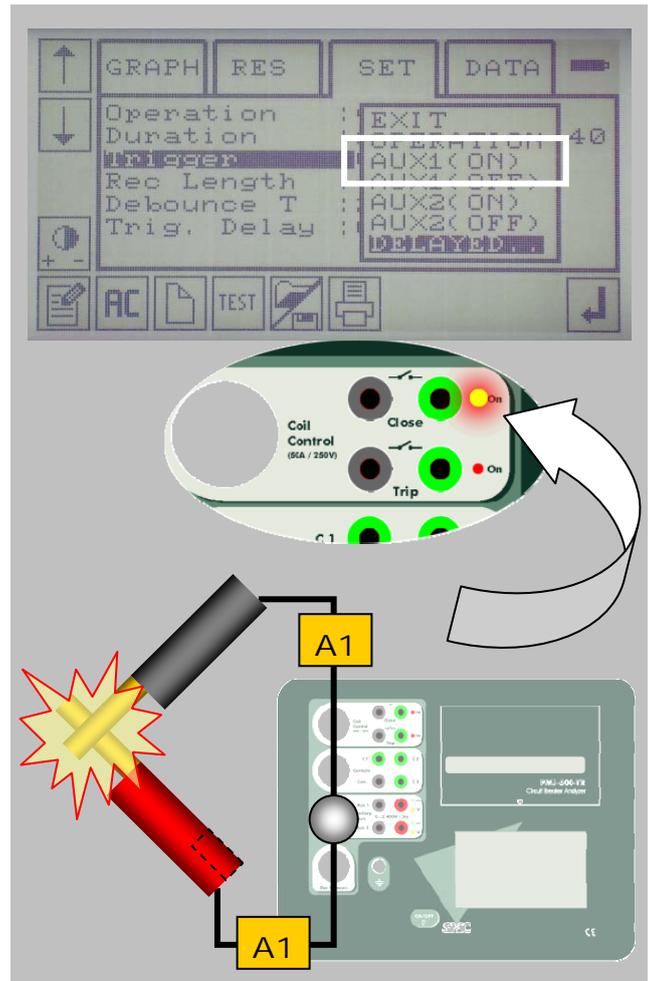


If you obtain different results, check the continuity of your test leads, double-check the connections as described above and repeat the test. If problems persist, refer to the troubleshooting section in the user’s manual. There are internal fuses that might be blown.

### Checking the Auxiliary inputs

The Aux1 and Aux2 inputs can be used individually as timing inputs for other contacts in the circuit breaker (typically the coil or the signalling contacts) or as triggering inputs to synchronize the PME-500-TR to an external start signal when a remotely controlled test is required. To check these inputs for integrity and proper operation, do the following:

1. Plug the Aux input cable into the Auxiliary Inputs multi-connector.
2. Open the SET menu and program a simple CLOSE for Operation.
3. Set Duration to 2000 ms for the Close command.
4. Set the Trigger option to Aux1(ON).
5. Open the TEST screen and press the START / STOP button. A message “Waiting for trigger” should be displayed at the bottom of the screen.
6. Identify the two 4-mm terminals labelled as A1 at the free end of the Auxiliary Input test cable.
7. While observing the red Close LED on the right of the black / green Close coil control inputs, put the two A1 terminals in contact momentarily as shown in the figure. The Close LED should turn on for 2 seconds. To repeat, just press the START / STOP button and try again.
8. Repeat steps 4-7, this time choosing Aux2(ON) in step 4 and using the terminals labelled as A2.
9. Exit the TEST menu
10. Interconnect both A1 terminals by inserting one into the back of the other. Do the same with both A2 leads.
11. Enter the SET menu and set the Trigger option to Aux1(OFF).
12. Open the TEST screen and press the START / STOP button. A message “Waiting for trigger” should be displayed at the bottom of the screen.
13. While observing the red Close LED on the right of the black/green Close coil control inputs, undo the connection of the two A1 terminals. The Close LED should turn on for 2 seconds. To repeat, re-connect the terminals, press the START / STOP button and try again.
14. Repeat steps 11-13, this time choosing Aux2(OFF) for Trigger in the SET menu and disconnecting the terminals labelled as A2 in step 13.



**NOTE**

Restore your normal settings and check the unit's date/time for proper adjustment before putting the PME-500-TR back into the transport bag

\*\*\* END OF THE DOCUMENT \*\*\*