# MOM690
# Microhmmeter


- **Easy-to-use**
- **Automatic range setting**
- **MOM Win PC-software**

## Description

Measuring resistance is an important part of maintaining high-voltage breakers and disconnecting switches. Instruments that measure the resistance of high-current contacts and other transmission elements have been included in the Megger line of products for many years.

MOM690™ supplements our family of microhmmeters. In addition to high current capacity, MOM690™ features microprocessor-based measurement, storage and reporting. The built-in software enables you to carry out an individual test or an entire series of tests and store the results.

With the optional MOMWin™ software you can also export the test results to a PC for further analysis and reporting. Ranges are set automatically, resistances are measured continually and test results can be automatically captured at a preset test current. What could be simpler?

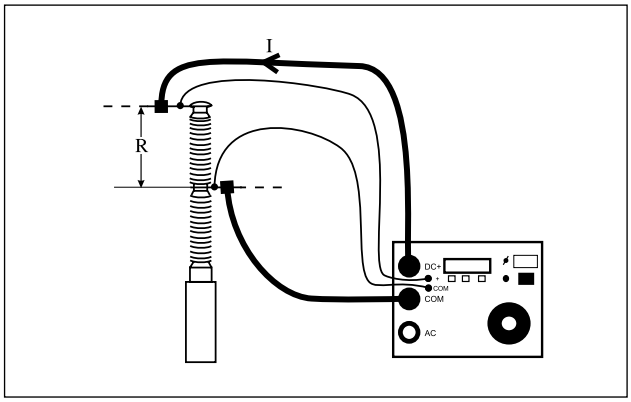
After testing a breaker with a CT mounted in its current circuit, e.g. dead tank and GIS breakers, some standards recommended that the CT is demagnetized. This troublesome task can be accomplished quickly and easily thanks to the MOM690's AC output. The AC output can also be used as a general multi-purpose current source in different applications.

## Application example

IMPORTANT!
Read the User's manual before using the instrument.

### Measuring the resistance of a breaker

1. Make certain the line is de-energized on both sides of the breaker.
2. Ground the breaker on one side and make certain it is closed.
3. Ground the microhmmeter.
4. Make certain the microhmmeter's ON/OFF switch is OFF while making connections.
5. Connect the current cables to the DC+ and COM terminals and the sensing cables to the sensing inputs to both sides of the breaker, making sure that the polarities match properly. IMPORTANT: The sensing cables must be connected inside the current cables. Otherwise the test data will be incorrect. See Fig.
6. Switch on the MOM690.
7. Select "AUTO" or "MAN" with the <FUNC>-button.
8. Set output current to zero to start the measurement.
9. Increase the current to the desired value (600 A for example).
10. Read the resistance value.

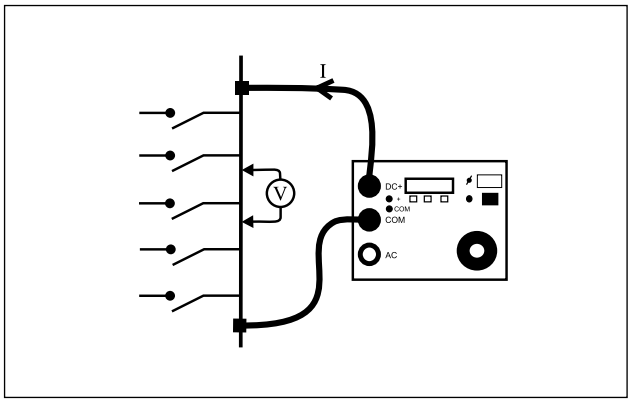



**Measuring the resistance of a breaker**

### Measuring resistance at busbar joints

1. Make certain the line is de-energized and the test object is grounded.
2. Ground the microhmmeter.
3. Make certain the microhmmeter's ON/OFF switch is OFF while making connections.
4. Connect the microhmmeter's current cables to the test object. Do not connect the sensing cables. Measurement will be done manually using an external portable voltmeter.
5. Switch on the MOM690.
6. Select "MAN" with the <FUNC>-button.
7. Set output current to zero to start the measurement.
8. Increase the current to the desired value (100 A for example).
9. Using an external voltmeter, measure the voltage drop across each contact element within every section of the busbar being tested. The voltmeter must be set to DC.
10. Calculate the actual resistance.

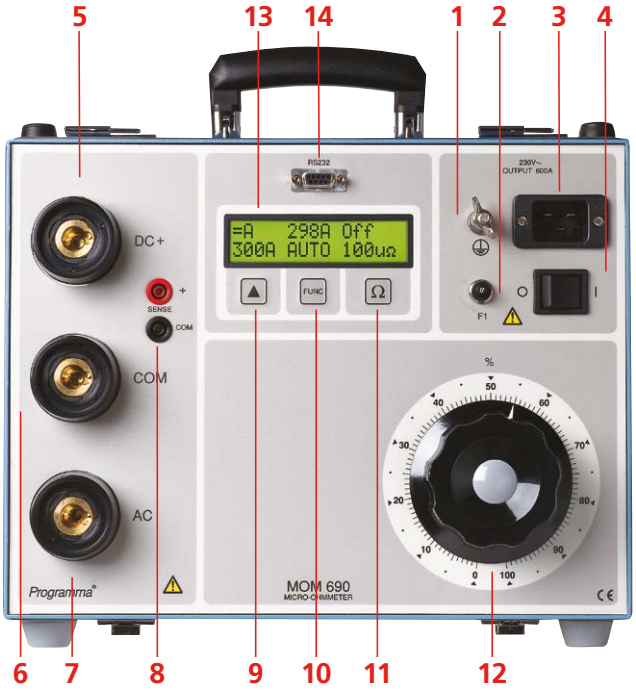
**Example**: If the voltage drop is 0.0067 V at a current of 100 A, the resistance will be 0.0067/100 Ω, i.e. 67 μΩ.




**Measuring resistance at busbar joints**

## Features and benefits

1. Grounding terminal
2. Miniature circuit breaker for mains
3. Connection for mains voltage
4. Switch for mains voltage
5. DC current output
6. Common output terminal
7. AC current output
8. Voltage measurement input
9. Setting selector
10. Function selector
11. Interrupts current and toggles the display between resistance and voltage
12. Variable transformer
13. Display
14. RS 232 Serial interface




Information about current generation or memory location.

Value of the generated current.

Indicates whether the current is above (<) or below (>) a preselected value.

Selected test current for "**Auto**"/"**DC Off**". Scroll using the <▲>- button.

Selected function. Scroll using the <**FUNC**>-button.

Shows the measured resistance or voltage value. Toggle by pressing the <**Ω**>-button.

## Specifications

Specifications are valid at nominal input voltage and an ambient temperature of +25°C, (77°F). Specifications are subject to change without notice.

### Environment

| | |
|---|---|
| *Application field* | The instrument is intended for use in high-voltage substations and industrial environments. |
| *Temperature* | |
| *Operating* | 0°C to +50°C (32°F to +122°F) |
| *Storage & transport* | -40°C to +70°C (-40°F to +158°F) |
| *Humidity* | 5% – 95% RH, non-condensing |

### CE-marking

| | |
|---|---|
| *EMC* | 2004/108/EC |
| *LVD* | 2006/95/EC |

### General

| | |
|---|---|
| *Mains voltage* | 115/230 V AC, 50/60 Hz |
| *Power consumption (max)* | 115 V, 5980 VA (at 600 A output)<br>230 V, 9660 VA |
| *Protection* | Miniature circuit breaker, thermal fuse, software |
| *Dimensions* | |
| *Instrument* | 350 x 270 x 220 mm<br>(13.8" x 10.6" x 8.7") |
| *Transport case* | 610 x 290 x 360 mm<br>(24.0" x 11.4" x 14.2") |
| *Weight, 115 V model* | 24 kg (52.9 lbs)<br>38.9 kg (85.7 lbs) with accessories and transport case |
| *Weight, 230 V model* | 23.7 kg (52.2 lbs)<br>38.6 kg (85.1 lbs) with accessories and transport case |
| *Available languages* | English, French, German, Spanish, Swedish |
| *Current cables* | 2 x 5 m (16 ft), 50 mm² |
| *Sensing cables* | 2 x 5 m (16 ft), 2.5 mm² |
| *Optional current cable sets* | |
| *Ext.1* | Extension 2 x 5 m, 50 mm² |
| *Ext.2* | Extension 2 x 10 m, 50 mm² |
| *2 x 15 m (49.2 ft)* | 95 mm² |

### Measurement section

#### Ammeter

| | |
|---|---|
| *Range* | 0 – 800 A |
| *Resolution* | 1 A |
| *Inaccuracy* | 100 – 800 A, ±1% of reading + 1 digit<br>50 – 99 A, ±(2% of reading + 2 digits)<br>0 – 49 A, not specified |

#### Resistance

| | |
|---|---|
| *Range* | 0 – 200 mΩ, > 200 mΩ not specified |
| *Resolution* | 1 µΩ |
| *Inaccuracy* | 100 – 800 A, ±1% of reading + 1 digit<br>50 – 99 A, ±(2% of reading + 2 digits)<br>0 – 49 A, not specified |

### Max. load resistance / current, 115 V model

| Cable set | Standard | Standard + Ext. 1 | Standard + Ext. 1 | 2 x 15 m 95 mm² |
|---|---|---|---|---|
| **At 300 A** | 10 mΩ | 6 mΩ | 3 mΩ | 10 mΩ |
| **Max. current** | 575 A | 420 A | 360 A | 540 A |

### Max. load resistance / current, 230 V model

| Cable set | Standard | Stadard + Ext. 1 | Stadard + Ext. 1 | 2 x 15 m 95 mm² |
|---|---|---|---|---|
| **At 300 A** | 18 mΩ | 14 mΩ | 11 mΩ | 18 mΩ |
| **At 600 A** | 3.0 mΩ | | | 1.8 mΩ |
| **Max. current** | 750 A | 570 A | 480 A | 690 A |

### Output DC (CAT I), 115 V model

| Current (A) | Voltage (V) | Max. load time | Input current (A) |
|---|---|---|---|
| 0 | 7.3 | – | 0.8 |
| 50 | 6.9 | 30 min. | |
| 100 | 6.4 | 10 min. | 10 |
| 200 | 5.5 | 90 s | 19 |
| 300 | 4.8 | 50 s | |
| 400 | 3.9 | 30 s | 38 |
| 500 | 3.0 | 15 s | |
| 575[1)] | 2.5 | 10 s | |
| 600 | 2.2 | 8 s | 52 |
| 700 | 1.5 | 5 s | |
| 800[2)] | 0.9 | – | |

1) Maximum current with standard cables 2 x 5 m 50 mm²
2) At 800 A and above, instant shut off

Note: The above figures shows maximum load time from cold state 25°C. They are not valid for repeated tests

### Output AC (CAT I), 115 V model

| Current (A) | Voltage (V) | Max. load time | Rest time |
|---|---|---|---|
| 0 | 8.7 | Cont. | – |
| 660 | 3.5 | 2 s | 4 min. |

Note: The DC and AC outputs must not be loaded at the same time.

### Output DC (CAT I), 230 V model

| Current (A) | Voltage (V ) | Max. load time | Input current (A) |
|---|---|---|---|
| 0 | 9.4 | – | 0.4 |
| 50 | 9.0 | 30 min. | |
| 100 | 8.6 | 10 min. | 6 |
| 200 | 8.0 | 90 s | |
| 300 | 7.2 | 50 s | |
| 400 | 6.4 | 40 s | |
| 500 | 5.7 | 30 s | |
| 600 | 5.0 | 15 s | 33 |
| 700 | 4.3 | 8 s | |
| 750[1)] | 3.8 | 5 s | |
| 800[2)] | 3.6 | – | 42 |

1) Maximum current with standard cables 2 x 5 m 50 mm²
2) At 800 A and above, instant shut off

Note: The above figures shows maximum load time from cold state 25°C. They are not valid for repeated tests

### Output AC (CAT I), 230 V model

| Current (A) | Voltage (V AC) | Max. load time | Rest time |
|---|---|---|---|
| 0 | 11.2 | Cont. | – |
| 660 | 4.5 | 2 s | 4 min. |

Note: The DC and AC outputs must not be loaded at the same time.

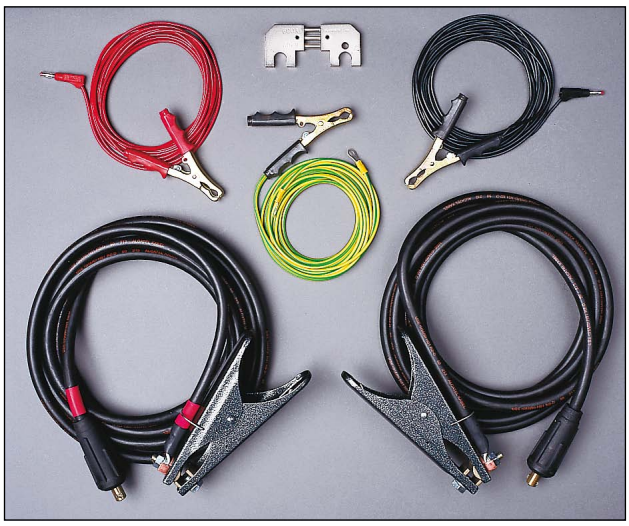
## Optional accessories

**PC Software MOMWin**
An optional Windows® program named MOMWin is available for MOM690. It can be used to control measurement, analyse the results and report the results from a PC. It also enables you to retrieve test results stored previously in MOM690.

All readings are saved in ASCII-format and can be easily exported to your favourite spreadsheet program. Results can be presented in table or diagram form in MOMWin.

The program runs in Windows® 95, 98, NT, 2000 or XP. Minimum requirement is a 486 computer with 8 MB of RAM.

Incl. serial cable for RS-232 port.



**Cable set and current shunt**

## Ordering information

| Item | Art. No. |
|---|---|
| **MOM690**<br>Complete with:<br>Cable set standard GA-05055<br>Ground cable GA-00200<br>Transport case GD-00182 | |
| **115 V Mains voltage** | BB-41190 |
| **230 V Mains voltage** | BB-42390 |
| **Optional** | |
| **PC Software MOMWin**<br>Incl. serial cable for RS-232 port | BB-8010X |
| **Cable set 15 m (49 ft)**<br>2 x 15 m (49 ft), 95 mm² (current cables)<br>2 x 15 m (49 ft), 2.5 mm² (sensing cables)<br>Weight: 29.4 kg (64.8 lbs) | GA-09155 |
| **Cable extension sets**<br>Since all current cables have bayonet connectors, standard cables can be easily prolonged with 5- or 10-metre extension sets if so desired. In situations requiring high currents and long cable lengths, heavier cable sets may be necessary however. | |
| **Extension cable set No. 1**<br>2 x 5 m (16 ft), 50 mm² (current cables).<br>2 x 10 m (33 ft), 2.5 mm² (sensing cables).<br>Weight: 7.5 kg (16.5 lbs) | GA-05057 |
| **Extension cable set No. 2**<br>2 x 10 m (33 ft), 50 mm² (current cables).<br>2 x 15 m (49 ft), 2.5 mm² (sensing cables).<br>Weight: 15 kg (33 lbs) | GA-05107 |
| **Calibration shunt**<br>An optional calibration shunt (600 A/60 mV) can be ordered for MOM690, that enables you to make certain that the instrument readings remain correct. | BB-90024 |
| **Transport case XL**<br>With space for the standard 5 m cable set + extension cable set No. 1 or No. 2. | GD-00042 |

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