

# CIRCUIT BREAKER ANALYZER

▶ **PME-500-TR**



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# PME-500-TR

## Circuit Breaker Analyzer

### DESCRIPTION



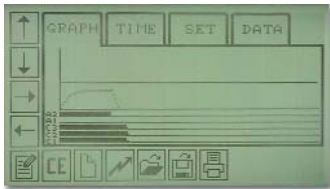
The PME-500-TR is an extraordinary forward step in the concept of circuit breaker test equipment, due to its simple and easy control method. The equipment saves time and improves testing productivity.

The control of the equipment is by a touch screen panel. This allows test parameters to be entered and gives a visual display of the test results in graphic and numeric format. A built-in thermal printer enables test results to be printed immediately.

The PME-500-TR can be connected to any AC supply between 100 and 240V. The unit is also powered by internal rechargeable batteries that provide 10-hour operation time, allowing to work also when no AC supply is available. The equipment is provided with special test leads that have a multi-pole connector. Measurement of the contact resistance of each main pole is performed automatically, with a test current of 10 A and a resolution of 0.1  $\mu\Omega$ .

All connection elements are located on the front panel. The test connection inputs are duplicated, as the equipment is supplied with special testing cable leads and there are also 4 mm input taps, with which any other cable can be used. The software EuroBreaker Basic is supplied with the equipment. This software enables to download, print and export to MS Excel-readable format the test results previously saved in the unit.

All the features contained in the equipment, such as manual control via the touch screen panel, an internal battery supply, a built-in printer and having a clear and easy to operate system, make the PME-500-TR the most advanced equipment within its category to test circuit breakers. The unit is enclosed in an airtight, IP67-rated waterproof case.



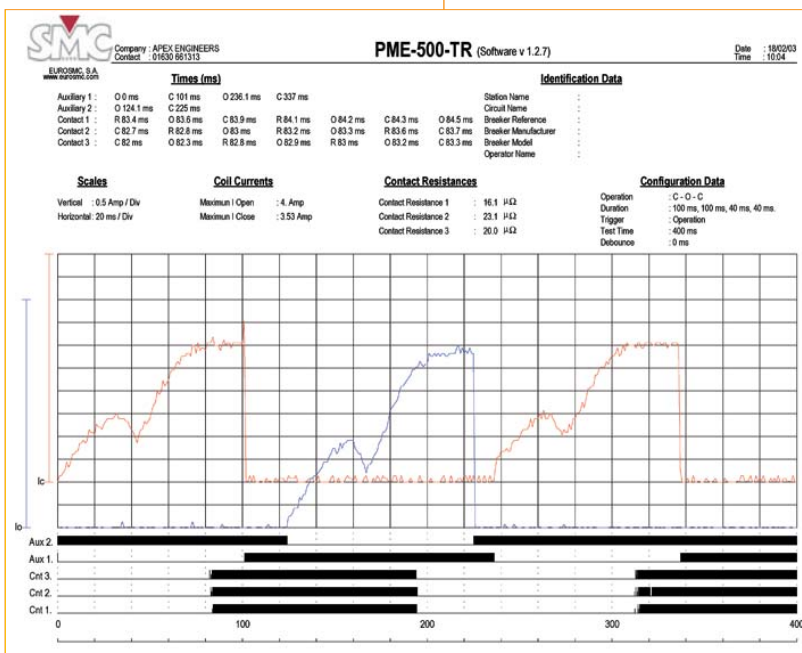
Graphical results display



Numerical results display



On-screen keyboard



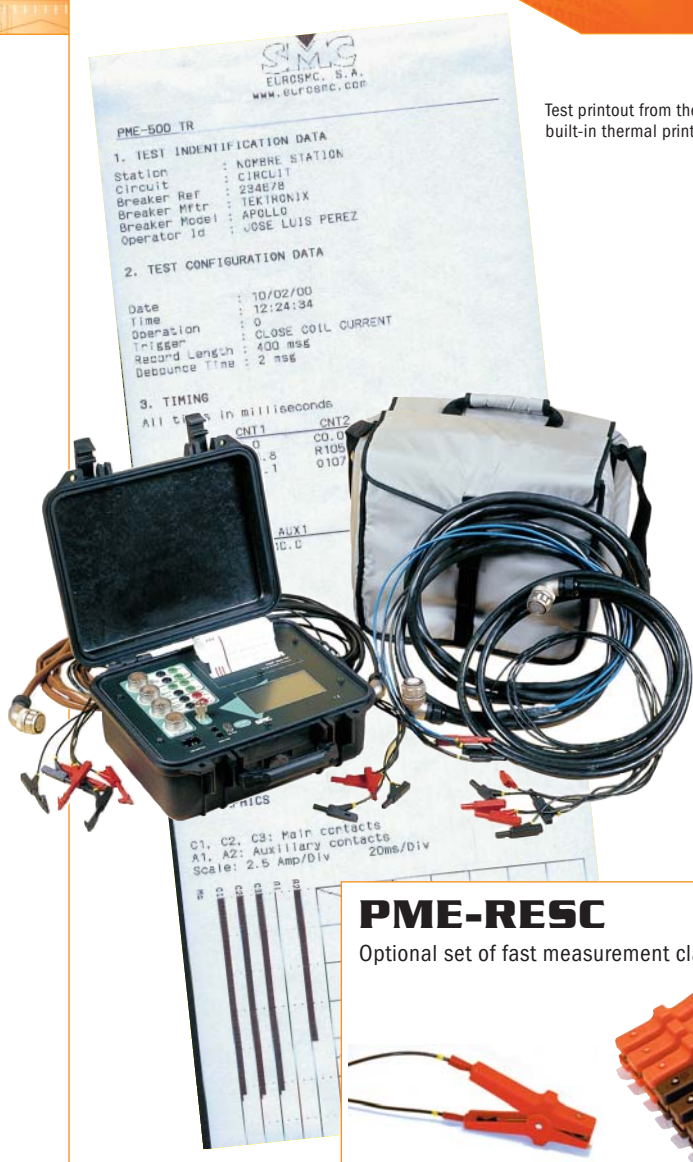
The test results can be viewed, exported or printed from the computer. The report can be personalized by adding your corporate logo.

### APPLICATIONS

- Simultaneous measurement for the 3 main contacts (open/ closed) and 2 auxiliary contacts, including pre-insertion resistors (if present in the circuit breaker).
- Evaluates the synchronism between the circuit breaker poles.
- Determines the maximum currents, opening and closing times, simultaneously in both coils.
- Evaluates the state of the substation's auxiliary batteries by graphically showing the coil consumption.
- Immediately displays and prints test results, both numerically and graphically.
- Automatically calculates the contact resistance in the three chambers.
- Travel, speed & acceleration analysis with the optional PME-TCE plug-in module.

## CHARACTERISTICS

- 3 timing inputs for the three main contacts, 0.1 ms resolution.
- 2 isolated auxiliary binary inputs, with a capacity for dry contacts or voltage signals up to  $\pm 360$  V AC/DC, 0.1 ms resolution.
- Measures and records the Coil currents simultaneously (open and close), with 1 ms resolution up to 50 A DC (auto range).
- Automatic measurement of the contact resistance, 0,1  $\mu\Omega$  resolution.
- Stores up to 60 test results in non-volatile FLASH memory.
- Connection to the breaker by means of a special simplified cable connector or by 4-mm input taps.
- Built-in thermal printer, 110-mm wide.
- Internal NiMh rechargeable batteries, up to 10 hours duration.
- Programmable operating sequences C, O, C-O, O-C, C-O-C and O-C-O.
- Immediate graphic display of the test results.
- A large Touch Screen panel (113 x 61 mm) for graphical display and touch-sensitive menu-based control.
- Allows the setup of the test data and test configuration from the touch screen panel with on-screen touch keyboard.
- Supplied with Windows-compatible software to download test results to a computer.
- Reduced size and light weight (340 x 300 x 150 mm, 8 kg.).



Test printout from the built-in thermal printer

Equipment with the standard accessories supplied.

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1. TEST IDENTIFICATION DATA  
Station : KOPRE STATION  
Circuit : CIRCLIT  
Breaker Ref : 234E/8  
Breaker Mfr : TEKIONIX  
Breaker Model : APOLLO  
Operator Id : JOSE LUIS PEREZ

2. TEST CONFIGURATION DATA  
Date : 10/02/00  
Time : 12:24:34  
Operation : 0  
Trigger : CLOSE COIL CURRENT  
Record Length : 400 ms  
Debounce Time : 2 ms

3. TIMING  
All times in milliseconds

	CNT1	CNT2
CO. O	0.8	R105
CO. C	1	0107

AUX1  
DC, C

### PME-RESC

Optional set of fast measurement clamps



## PME-TCE

Optional travel, speed and acceleration analysis plug-in module



### CHARACTERISTICS

Digital inputs (3):	single-ended TTL, 5 V, 100mA
Analogue input (1):	7.5 V, 10 mA
Data interfaces	USB, PME BUS®
Power supply	USB, PME BUS® or external adapter
Sampling frequency	5 kHz per channel
Max. recording time	20 seconds
Dimensions	148 x 89 x 25 mm
Weight	192 g

The PME-TCE extends the PME-500-TR applications by adding contact travel, speed and acceleration data to the standard circuit breaker evaluation results. This small interface module communicates with the PME-500-TR via the built-in PME BUS®, from which it also takes the necessary power. The whole set of results are permanently stored in its own non-volatile memory, and then downloaded from a standard computer via USB, not even needing the main PME-500-TR unit for this purpose. The PME-TCE features 3 inputs for digital linear or rotary encoders and one additional input for analogue transducers.

# PME-500-TR

## TECHNICAL SPECIFICATIONS

### INPUTS

#### MAIN CONTACT INPUTS

Number:	3 inputs + common (ground)
Open circuit voltage:	10 V DC maximum
Testing current:	100 mA maximum
States:	Closed (C) ( $r < 30\Omega$ )
	Preinsertion (R) ( $30\Omega < r < 10k\Omega$ )
	Open (O) ( $r > 10k\Omega$ )

#### AUXILIARY INPUTS

Number:	2 isolated binary inputs
Contact mode:	Open circuit voltage: 5 V DC
	Testing current: 20 mA maximum
Voltage mode:	Range: From $\pm 1.5$ to $\pm 360$ V AC/DC
	Low activation mode (Low) $\pm 1.5$ V AC/DC
	High activation mode (High) $\pm 15$ V AC/DC

### OPERATING SEQUENCES AND TIMING

Single command:	Close (C), Open (O)
Double:	Close-Open (C-O), Open-Close (O-C)
Triple:	Close-Open-Close (C-O-C), Open-Close-Open (O-C-O)

#### COMMAND DURATION

Close, Open, Interval	Between 10 and 2,000 ms
Acquisition start delay	Between 0 and 18 s.

#### ACQUISITION START SIGNAL

Selectable between:	Coil operation
	Aux1 or aux2 status change
	Main contact status change
	Programmed DELAY

### GENERAL

Compliance:	IEC-61010 / EMC-50081-2 / EN-50082-2
Voltage supply:	100 to 240 V AC 50-60 Hz
Internal battery:	NiMH Type 12 V DC
Normal operating time:	10 hours
Battery recharge time:	4.5 hours
Dimensions (in mm):	Height: 340/Width: 300/Depth: 150
Weight:	8 kg. - 17.6 lb.
Working temperature:	0° - 55° C
Storage temperature:	-40° / +70° C
Humidity:	Up to 95% (non condensating)
Languages incorporated:	English, Spanish, French, German, Italian, etc.

DISTRIBUTED BY:

### MEASUREMENTS

#### Time measurement and graphic representation

RANGES:	Selectable between 100 ms, 200 ms, 400 ms, 800 ms and 2000 ms
RESOLUTION:	$\pm 0.1$ ms (sampling frequency of 10 kHz)
Accuracy:	$\pm 0.05\%$ $\pm 0.1$ ms
Graphic representation resolution:	0.8 ms per mm

#### Current measurement and graphic representation

Range:	0 - 50 A DC
Resolution:	0.1 A (sampling frequency of 1 kHz)
Accuracy:	1% of the range $\pm 100$ mA
Graphic representation resolution:	Automatic scale up to 50 mA per mm (vertical)

#### Contact resistance measurement

Ranges:	Automatic range selection from 100.0 $\mu\Omega$ to 1.000 $\Omega$
Resolution:	0.1 $\mu\Omega$ maximum
Accuracy:	$\pm 1\%$ of the range $\pm 1$ digit
Testing current:	10 A DC maximum

### TOUCH SCREEN PANEL, PRINTER AND MEMORY

#### GRAPHIC TOUCH SCREEN

Type:	Transflective LCD
Dimensions:	113 x 61 mm
Color:	Black and white
Contrast:	Adjustable
Illumination:	CCFL

#### BUILT IN PRINTER

Type:	Thermal
Paper width:	110 mm (standard)
Maximum diameter of paper roll:	40 mm

#### MEMORY

Internal memory: Stores up to 60 test results

### STANDARD ACCESSORIES INCLUDED

- EuroBreaker Basic software for Windows
- User's manual
- 1 voltage supply cord, Schuko type 2.5 m
- 1 coil control & measurement cable 5 m\*
- 1 auxiliary input timing & trigger cable 5 m\*
- 1 three-phase main contact timing test cable 5 m\*
- 1 three-phase contact resistance measurement cable 5 m\*
- RS-232 communications cable
- Lightweight Nylon carrying bag
- 1 set of spare fuses
- 2 coil protection diodes
- 1 set of crocodile type clamps
- 2 thermal paper rolls

\*Also optionally available in 11-meter length.

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