# Moving Test – MT10

## Portable Reference Meter

## General

The MT10 is a portable working standard based on state of the art technology in power and energy measurement. Various measuring features combined with a user friendly operation concept is providing the greatest possible flexibility for a comprehensive testing of metering installations in the field.
Its excellent measurement stability is reflecting the high quality of the system.
The MT10 working standard is distinguished by its exemplary combination of functionality and design. It is offering optimal ergonomics and functionality combined with an excellent menu guided operation via built-in soft-keys and a 6.4" LCD-display.


## Features

- Easy and user friendly operation
- Current measurement up to 120 A with error compensated clamp on CTs
- Accuracy class 0.2
- No additional error for reactive measurement
- Unique long-term and temperature stability
- Driven by powerful rechargeable battery-pack*
- Internal memory to store measurement results and customer data
- Windows based data management software MTVis for evaluation of the test results and test report generation
- A complete and light weight meter test set

## Functions

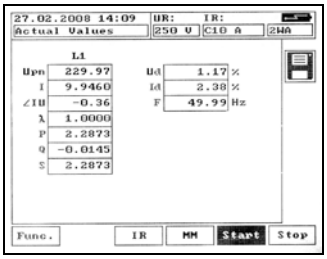
- Testing of electricity meter installations with single-phase 2-wire
- Testing of energy and power registers
- Power and energy measurement of active, reactive and apparent energy
- 4-quadrant measurement
- Frequency-, phase angle- and power factor measurement
- Harmonic curve analysis for voltage and current up to the 40th harmonics
- Distortion factor measurement
- Vector diagram display
- Curve sampling
- Rotary field indication
- * Selective power measurement
- * External thermal-printer for presentation of the measuring results at customer side

* optionally available

## Actual Value Measurement

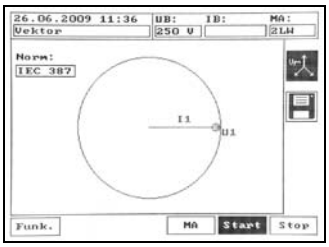
All instantaneous values are simultaneously displayed.

- RMS values of voltage and current
- Phase angle between voltage and current
- Active, reactive and apparent power
- Frequency
- Power factor (cos φ)



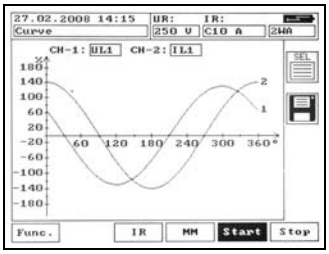

## Vectorial Display

The vector diagram display makes it very easy to detect wiring faults in the voltage and current circuits of a meter installation.



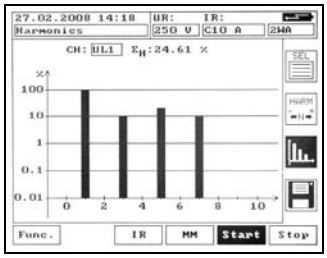

## Curve Display

The curve display for voltage and current serves for analyzing the signal quality. Two channels can be measured and displayed simultaneously. The measured curve can be stored in the internal memory of the system according to the customer information data.



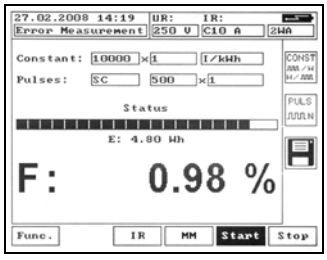

## Harmonic Measurement

The MT10 can measure harmonics in voltage and current up to the 40$^{th}$ harmonics (conform to the voltage quality norm DIN EN 50160) which is possible by the high scanning rate of the working standard. The measured harmonic spectrum can be displayed in a chart or in a diagram.




## Error Measurement

By entering all relevant parameter like meter constant and the number of pulses, the system can perform the error measurement on electricity meters. The system is able to determine the percentage error and the operator can store it according to the customer information data. To be informed about the status of the measurement a bar graph indicates continuously the registered energy.




## Optional Features

- Scanning head (universal or only for LED)
- Pulse converter K121
- External thermal printer
- Rechargeable battery

**Technical Data**

# MT10 Portable Reference Meter

| | |
|---|---|
| **General** | |
| Power supply | 16 V DC ±3 %, 2.5 A |
| Power consumption | ~ 20 VA |
| Rechargeable battery operation : operating time | ~ 1 h |
| Rechargeable battery operation : recharging time 7) | ~ 3 h |
| Temperature range, operation | -15° ... + 50° C |
| Temperature range, storage | -15° ... + 65° C |
| Relative humidity (not condensing) | max. 95 % |
| Dimensions (DxWxH) | 190 x 190 x 80 mm |
| Weight | ~ 1.6 kg |
| Max. height above sea level | 2000 m |
| External power supply unit | Typ: Mascot 9921<br>(90 ... 264 V / 47 ... 63 Hz / max 0.9 A) |
| **Safety** | |
| IP class according to DIN EN 60529 | IP40 |
| Declaration of conformity | CE conform |
| Overvoltage category voltage measurement | CAT III 300 V |
| Overvoltage category current measurement (MT3431) | CAT III 30 V |
| **Reference meter** | |
| Measuring modes 10) | 1-ph 2 WA / WR / WAP |
| Fundamental frequency | 15 ... 70 Hz |
| Bandwidth | 3000 Hz |
| Sampling | 16 bit 504 samples/period |
| Accuracy class for measuring of power / energy | 0.2 |
| Angle measurement accuracy 3) 4) | < 0.1° |
| Frequency measurement deviation | ± 0.01 Hz |
| **Voltage Measurement** | |
| Voltage measurement | 10 ... 300 V |
| Voltage range(s) | 250 V |
| Voltage channels input impedance (@ range) | 245 kΩ @ 250 V |
| Voltage measurement accuracy 3) 5) | < 0.05 % @ 30 ... 300 V |
| Voltage measurement temperature drift 3) | < 15 x 10 E-6 / K |
| Voltage measurement stability 1) | < 50 x 10 E-6 |
| Voltage measurement long term stability 2) 3) | < 100 x 10 E-6 / Year |
| **Current measurement via AC current clamps MT3431** | |
| Current measurement | 5 mA ... 120 A |
| Current range(s) | 100 A, 50 A, 10 A, 5 A, 1 A, 0.5 A, 0.1 A, 0.05 A |
| Usage of ranges | 10 ... 120 % |
| Current measurement accuracy 5) | < 0.15 % @ 500 mA ... 120 A<br>< 0.3 % @ 100 mA ... < 500 mA |
| Current measurement temperature drift 4) | < 50 x 10 E-6 / K |
| Current measurement stability 1) 4) | < 150 x 10 E-6 |
| Current measurement long term stability 2) 4) | < 600 x 10 E-6 / Year |
| Clamp for max. Ø | 12 mm |
| **Power Measurement (@MT3431)** | |
| Power/energy measurement accuracy 3) 4) 5) 6) | < 0.2 % |
| Power/energy measurement temperature drift 3) 4) | < 65 x 10 E-6 |
| Power/energy measurement stability 1) | < 200 x 10 E-6 |
| Power/energy measurement long term stability 2) | < 700 x 10 E-6 / Year |

1: Stability over 1 hour (every minute one measurement with ti = 60 s)
2: Stability over 1 year (every month one measurement with ti = 60 s)
3: From 30 V ... 300 V (45 ... 65 Hz)
4: From 500 mA ... 120 A (45 ... 65 Hz)
5: Related to the read value at optimum range selection
6: Related of apparent power
7: at cells with different charge up to max.30 h
10:Depending on the selected option

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Subjects to alteration.

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