

Moving Test - MT 30

Portable Working Standard



ZERA

MT 30

The System Concept

The MT 30 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 MT 30 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

The MT 30 working standard is providing the following functions:

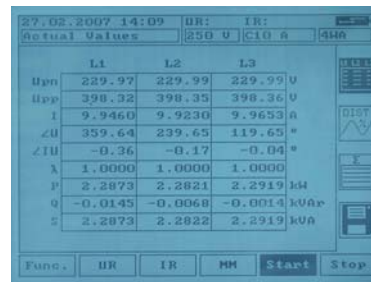
- Testing of electricity meter installations with single-phase 2-wire, three-phase 3-wire and three-phase 4-wire circuits
- Testing of energy and power registers
- Power and energy measurement of active, reactive and apparent energy
- 4-quadrant measurement
- Frequency-, phase angle- and power factor 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 site

* optionally available



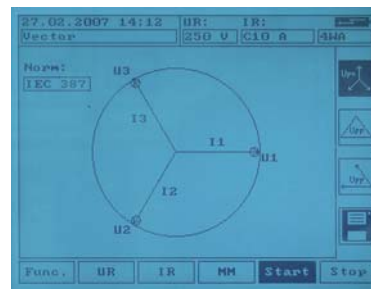
All instantaneous values are displayed simultaneously in a summary:

- RMS values of all voltage and current phases
- All phase angles between voltage and current
- Phase angles between the voltages
- Currents for all 3 phases
- Active, reactive and apparent power
- Frequency and phase rotation
- Power factor ($\cos \varphi$)



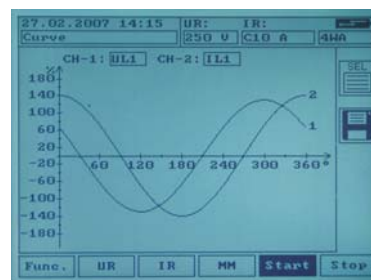
Actual Values Measurement

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



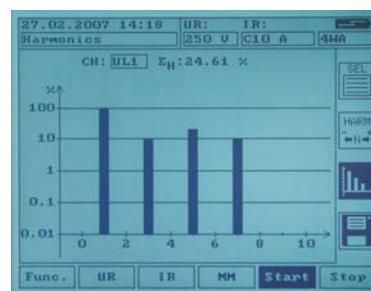
Vector Display

The curve display for voltage and current serves for analysing 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.



Curve Display

The MT 30 can measure harmonics in voltage and current up to the 40th 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.



Harmonic 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.



Error Measurement

Optional Features

- Quick connecting cable set
- Scanning head (universal or only for LED)
- Pulse converter K 121
- Flexible clamp
- Current clamps for 1000 A measurement
- External thermal printer

Technical Data

MT 30 Portable Working Standard	Accuracy Class 0.2
General	
Power supply adapter/charger	Input: 90 - 264 VAC, 47 - 63 Hz, 0.9 A Output: 16 VDC, 2.5 A
Power consumption	approx. 20 VA
Rechargeable battery – operating time	approx. 1 h
Rechargeable battery – recharging time	approx. 3 h
Temperature range – operation/storage	- 15 ° ... + 50 °C
Relative humidity (non considering)	< 95 %
IP class	40
Dimensions (HxWxD)	190 x 190 x 80 mm
Weight	approx. 1.6 kg
Reference Meter	
Measuring modes	three-phase 4-wire active / -reactive / -apparent three-phase 3-wire active / -reactive / -apparent single-phase 2-wire active / -reactive / -apparent
Fundamental frequency	15 ... 70 Hz, Bandwidth 2000 Hz, Accuracy 0.01 Hz
Accuracy class for measuring of power / energy	0.2
Voltage measurement	30 ... 300 VAC
Voltage range	250 V
Voltage measurement accuracy ^{3 5}	0.05 %
Voltage measurement temperature drift ³	< 15 ppm / K
Voltage measurement stability ^{3 4 5}	< 50 ppm
Voltage measurement long term stability ^{2 3}	< 100 ppm / year
Current measurement (only clamp on CT)	50 mA ... 120 A
Current ranges ⁷	100 A, 50 A, 10 A, 5 A, 1 A, 0.5 A
Current measurement accuracy ^{3 5 7}	< 0.15 % (500 mA ... 120 A) < 0.3 % (100 mA ... 500 mA)
Current measurement temperature drift ^{3 7}	< 50 ppm / K
Current measurement stability ^{1 4 7}	< 70 ppm
Current measurement long term stability ^{2 3 7}	< 600 ppm / year
Angle measurement error ^{3 7}	4 quadrant (range 0 ... 360°) Accuracy < 0.1 °
Frequency measurement error	< 0.01 Hz
Harmonic measurement	up to 40 th Harmonic
Power/energy measurement error ^{3 5 6 7}	< 0.2 % (500 mA ... 120 A) < 0.4 % (100 mA ... 500 A)
Power/energy measurement temperature drift ^{3 7}	< 65 ppm/K (500 mA ... 120 A)
Power/energy measurement stability ^{1 3 4 7}	< 100 ppm
Over voltage category	III/300 V
Safety standard	IEC 61326-1 IEC 61010

1 Stability over 1 hour (every minute one measurement with $t_i = 60$ s)
 2 Stability over 1 year (every month one measurement with $t_i = 60$ s)
 3 from 60 V to 300 V, resp. 500 mA to 120 A (45 to 65 Hz)
 4 duration of integration > 10 s

5 related of end of range
 6 related to apparent power
 7 only error compensated CT MT 3410

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