ZERA

MT300 Series

Moving Test - MT360/MT365

Portable Working Standard Meter

MT360 – Accuracy class 0.1

MT365 – Accuracy class 0.05

ZERA

MT300 Series

The System Concept

The MT360/MT365 is a portable light weight working standard based on newest technology in power and energy measurement. Various measuring features combined with a user friendly operation concept are providing the greatest possible flexibility for a comprehensive testing of metering installations in the field. Its double isolated plastic already reveals the high quality of the system.

The equipment offers high functionality combined with a menu guided operation via built-in soft-keys and a colored 6.4" TFT-display.

Features

- Accuracy class 0.05 (MT365), accuracy class 0.1 (MT360)
- Easy user-guidance
- Unique long-term and temperature stability of the measuring module
- Current measurement up to 120 A with error compensated AC current clamps
- Compact-flash memory to store measurement results and customer data
- Windows based data management software MTVis for evaluation of the test results
- External system control via PC with windows based control software
- No additional error for reactive measurement
- Long-range applications by great offering of accessories

Functions

The working standard is providing the following functions:

- Testing of electricity meter installations with 2-wire, 3-wire and 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 waveform analysis for voltage and current up to the 40th THD
- Determination of the operating burden on instrument transformer for CT and PT
- Distortion factor measurement
- Vector diagram display
- Waveform sampling
- Rotary field display
- Ratio test by simultaneous measurement of both primary and secondary currents in CT connected metering systems
- Selective power measurement
- Automatic meter testing*

* optional and in combination with ZERA source.

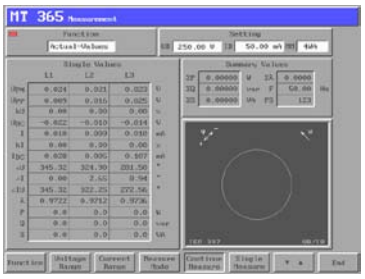
Data Management

After measurement the stored data can be sent to an external PC.
The data management software MTVis provides the ability to transfer data from the internal memory to an external PC where the data can be represented.
The stored data can be summarized to a measuring report or be exported for further applications.

Measured Value Display

All relevant measurement values are displayed in a scheme simultaneously:

- RMS values for all 3 phases (U_{PN})
- Phase angles between all 3 phases (U_{PP})
- Currents for all 3 phases
- Phase angle between the voltages (balance measurement)
- All phase angles between voltage and current
- Active, reactive and apparent power
- Frequency and rotary field
- Power factors (cos φ)

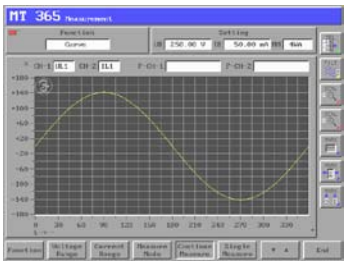


Vektor-diagramm

The vector diagram offers graphical information about phasing and voltages (RMS values and phase angles) and currents. Classification and balances can be detected very easily in order to identify wiring faults in the voltage and current circuits of a meter installation.

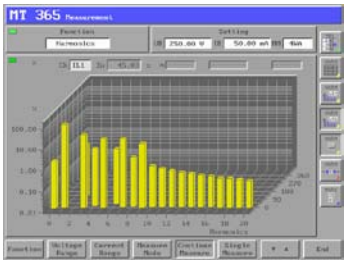
Curve Display

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.



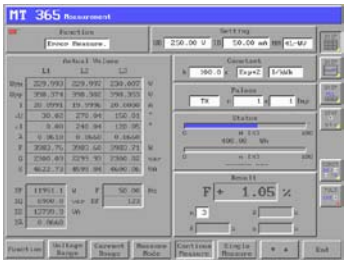
Harmonic Measurement

Due to the high sampling rate of the working standard the MT36x can measure harmonics in current and voltage up to the 40th THD (conform to the voltage quality norm DIN EN 50160).
The measured harmonic spectrum can be displayed in a chart or in a logarithmic 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 measure-ment a bar graph indicates continuously the registered energy.



Options

- Cable set / Quick connecting cable set
- Photo electric scanning head / Pulse converter
- Error compensated current clamps for 120 A measurement
- AC current clamps for 1000 A measurement

Technical Data

		MT360	MT365
General			
Power supply		85 - 132 VAC / 170 - 265 VAC, 47... 63 Hz	
Power consumption		approx. 35 VA	
Temperature range (operation)		-15° ... + 45° C	
Relative humidity (not condensing)		max. 95 %	
IP class		30	
Dimensions (HxWxD)		220 x 290 x 115 mm	
Weight		approx. 4 kg	
Reference Meter			
Measuring modes		4-wire active / -reactive / -apparent 3-wire active / -reactive / -apparent 2-wire active / -reactive / -apparent	
Fundamental frequency		15 ... 70 Hz	
Accuracy class for measuring of power / energy		0.1	0.05
Voltage measurement		100 mV ... 300 V	
Voltage ranges		5 ... 250 V	
Voltage measurement accuracy[3 5]		< 0,05 %	< 0,03 %
Voltage measurement temperature drift [3]		< 15 x 10^{-6}/K	< 5 x 10^{-6}/K
Voltage measurement stability [1]		< 50 x 10^{-6}	< 50 x 10^{-6}
Voltage measurement long term stability [2 3]		< 100 x 10^{-6}/year	< 80 x 10^{-6}/ year
Current measurement	Direct measurement	1 mA ... 12 A	
	AC current clamps	5 mA ... 120 A	
Current ranges		50 - 100 - 250 - 500 mA 1 - 2.5 - 5 - 10 A	
Current measurement accuracy [4 5]	Direct measurement 10 mA ... 12 A	< 0.05 %	< 0.03 %
	Direct measurement 5 ... 10 mA	< 0.2 %	< 0.2 %
	AC current clamps 0,5 ... 120 A [7]	< 0.15 %	< 0.15 %
	AC current clamps 0,1 ... 0,5 A [7]	< 0.3 %	< 0.3 %
Current measurement temperature drift [4]	Direct measurement up to 12 A	< 15 x 10^{-6}/K	< 5 x 10^{-6}/K
	AC current clamps [7]	< 50 x 10^{-6}/K	< 50 x 10^{-6}/K
Current measurement stability [1]		< 70 x 10^{-6}	< 70 x 10^{-6}
Current measurement long term stability [2 4]	Direct measurement up to 12 A	< 100 x 10^{-6}/year	< 80 x 10^{-6}/year
	AC current clamps [7]	< 600 x 10^{-6}/year	< 600 x 10^{-6}/year
Angle measurement error [3 4]	Direct measurement up to 12 A	< 0.015°	< 0.010°
	AC current clamps [7]	< 0.1°	
Frequency measurement error		± 0,01 Hz	
Power/energy measurement error [3 4 5 6]	Direct measurement up to 12 A	< 0.1 %	< 0.05 %
	AC current clamps 0,5 ... 120 A [7]	< 0.2 %	< 0.2 %
Power/energy measure-ment temperature drift [3 4]	Direct measurement up to 12 A	30 x 10^{-6}/K	10 x 10^{-6}/K
	AC current clamps 0,5 ... 120 A [7]	65 x 10^{-6}/K	65 x 10^{-6}/K
Power/energy measurement stability [1]		< 100 x 10^{-6}	

Status: 15th May 2012

1 stability over 1 hour (every minute one measurement with ti=60 s)
2 stability over 1 year (every months one measurement with ti=60s)
3 from 30 V to 300 V
4 direct: from 10 mA to 12 A / clamp MT3430: from 0.5 A to 120 A
5 related of end of range
6 related of apparent power
7 only error compensated CT's

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