

WM1000U | WM1000I

Measuring Bridges for Voltage Transformers and Current Transformers



Testing of Conventional Measuring Transformers

Measuring Bridge WM1000U WM1000I

The current/voltage measuring bridges WM1000U and WM1000I are high-precision comparator units for comparing secondary signal from transformer under test with a reference signal supplied by a standard device.

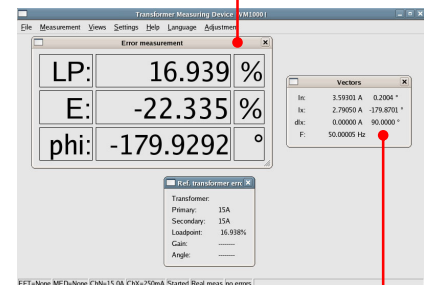
The resulting error value will be displayed as ratio error and phase displacement on the screen.

In general the operation of the measuring bridges will be performed via integrated 10.1" capacitive touch screen. Optionally control and read-out of the measuring values can be performed via integrated interfaces and PC.



Measuring bridge WM1000U

Display of load points and measured error values



Measured primary values

Transformers under Test

- Conventional voltage transformers (VT) and current transformers (CT) according to: IEC61869-1/2 (old: IEC60044-1), IEC61869-1/3 (old: IEC60044-2), ANSI/IEEE C57.13

Features

- Voltage inputs for VT with high impedance direct input (WM1000U)
- Current inputs for CT with high impedance direct input (WM1000I)
- User friendly operation via touch screen with integrated graphical user interface
- A/D conversion of measuring value by 24 Bit converter

RS232 interface Mains connection/main switch



Rear side WM1000U

DVI-, LAN- and USB-connection terminal

Current/voltage inputs

Mains connection/main switch



Rear side WM1000I

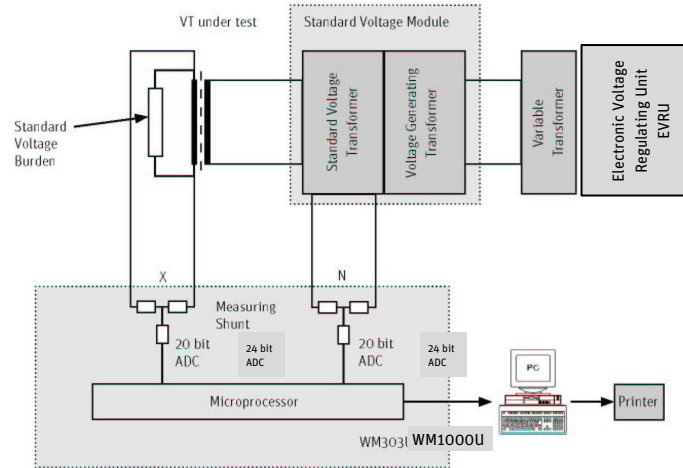
RS232 interface

DVI-, LAN- and USB-connection terminal

Principle Diagramm

Accuracy Test

Voltage transformer testing



Technical Data

WM1000U

Voltage Transformer Measuring Bridge WM1000U

General

Power supply	85 ... 265 V, 47 ... 63 Hz
Power consumption	55 VA
Temperature range, operation	5° ... + 40° C
Relative humidity (not condensing)	max. 95 %
Dimensions (LxWxH)	450 x 483 x 177 mm
Weight	~ 8.5 kg
Fundamental frequency	15 ... 65 Hz

Safety

IP class according to DIN EN 60529	IP30
Declaration of conformity	CE conform
Protection class according to DIN EN 61140	I

Voltage transformer measurement

Voltage input N-channel

Voltage measurement	2 V ... 500 V
Voltage channels input impedance (@ range)	380 K Ω / 500 pF @ 3.75 V ... 480 V
Voltage measurement accuracy 3)	< 100 x 10 E-6 @ 10 V ... 500 V < 200 x 10 E-6 @ 2 V ... < 10 V
Maximum of voltage	500 V

Voltage input X-channel

Voltage measurement	2 V ... 500 V
Voltage channels input impedance (@ range)	380 K Ω / 500 pF @ 3.75 V ... 480 V
Voltage measurement accuracy 3)	< 100 x 10 E-6 @ 10 V ... 500 V < 200 x 10 E-6 @ 2 V ... < 10 V
Maximum of voltage	500 V

Conventional voltage transformers

Ratio error indication 1) 3) 5)	TV 0.9 ... 1: < 50 x 10 E-6 @ 10 V ... 500 V < 100 x 10 E-6 @ 2 V ... < 10 V TV 0.5 ... < 0.9 : < 100 x 10 E-6 @ 10 V ... 500 V < 150 x 10 E-6 @ 2 V ... < 10 V TV < 0.5 : < 200 x 10 E-6 @ 10 V ... 500 V < 250 x 10 E-6 @ 2 V ... < 10 V
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Phase displacement indication 1) 3) 5)

	TV 0.9 ... 1: < 0.2 min @ 10 V ... 500 V < 0.5 min @ 2 V ... < 10 V TV 0.5 ... < 0.9 : < 0.4 min @ 10 V ... 500 V < 0.7 min @ 2 V ... < 10 V TV < 0.5 : < 0.6 min @ 10 V ... 500 V < 0.9 min @ 2 V ... < 10 V
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1: With TV = divider ratio (input voltage X / input voltage N) or (input voltage N / input voltage X)

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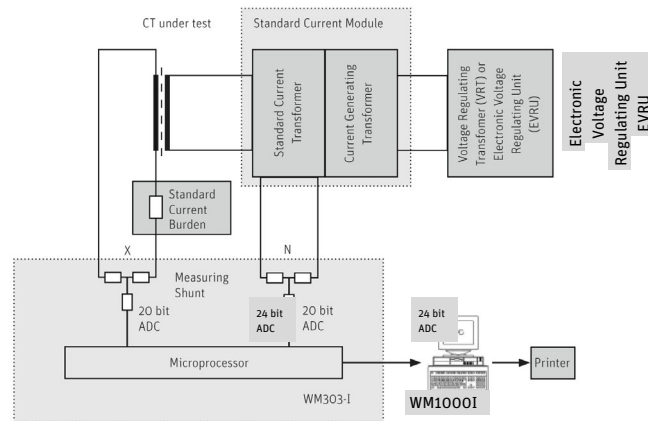
2: In N-channel @ 10 V ... 500 V

3: From 45 .. 65 Hz

5: Differential error, the accuracy of the single channels should not be added

Subjects to alteration.

Principle Diagramm Accuracy Test Current transformer testing



Technical Data WM1000I

Current Transformer Measuring Bridge WM1000I

General

Power supply	85 ... 265 V, 47 ... 63 Hz
Power consumption	max. 280 VA
Temperature range, operation	5° ... + 40° C
Temperature range, storage	-15° ... + 65° C
Relative humidity (not condensing)	max. 95 %
Dimensions (LxWxH)	450 x 483 x 177 mm
Weight	~ 11 kg
Max. height above sea level	2000 m
Fundamental frequency	15 ... 65 Hz

Safety

IP class according to DIN EN 60529	IP30
Declaration of conformity	CE conform
Protection class according to DIN EN 61140	I

Current transformer measurement

Current input N-channel

Current measurement	1 mA ... 15 A
Current channels input impedance (@ range)	< 5 mΩ
Current measurement accuracy 3)	< 100 x 10 E-6 @ 15A .. 50 mA < 200 x 10 E-6 @ < 50 mA ... 5 mA
Maximum current	15 A

Current input X-channel

Current measurement	1 mA ... 15 A
Current channels input impedance (@ range)	< 5 mΩ @ 5 mA ... 15 A
Current measurement accuracy 3)	< 100 x 10 E-6 @ 15A .. 50 mA < 200 x 10 E-6 @ < 50 mA ... 5 mA
Maximum current	15 A

Conventional current transformers

Ratio error indication 1) 3) 5)	TV 0.9 ... 1: < 50 x 10 E-6 @ 50 mA ... 15 A < 150 x 10 E-6 @ 5 mA ... < 50 mA TV 0.5 ... < 0.9 : < 100 x 10 E-6 @ 50 mA ... 15 A < 200 x 10 E-6 @ 5 mA ... < 50 mA TV < 0.5 : < 200 x 10 E-6 @ 50 mA ... 15 A < 300 x 10 E-6 @ 5 mA ... < 50 mA
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Phase displacement indication 1) 3) 5)

	TV 0.9 ... 1: < 0.2 min @ 50 mA ... 15 A < 0.5 min @ 5 mA ... < 50 mA TV 0.5 ... < 0.9 : < 0.4 min @ 50 mA ... 15 A < 0.7 min @ 5 mA ... < 50 mA TV < 0.5 : < 0.6 min @ 50 mA ... 15 A < 0.9 min @ 5 mA ... < 50 mA
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- 1: With TV = divider ratio (input current X / input current N) or (input current N / input current X)
 - 2: In N-channel @ 50 mA ... 15 A
 - 3: From 15 .. 65 Hz
 - 5: Differential error, the accuracy of the single channels should not be added
- Subjects to alteration.

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