

WM3000U | WM3000I

Measuring Bridges for Voltage Transformers and Current Transformers



Testing of Conventional, Electronical and
Non-conventional, Digital Measuring Transformers

Multifunctional Measuring Bridge WM3000U WM3000U WM3000I

The current/voltage measuring bridges WM3000U and WM3000I are high-precision comparator units for comparing secondary signal from transformer under test (or digital information of non-conventional transformers) 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.

Operation will be performed via integrated 6,4" touch screen or externally via interface.



Measuring bridge WM3000U

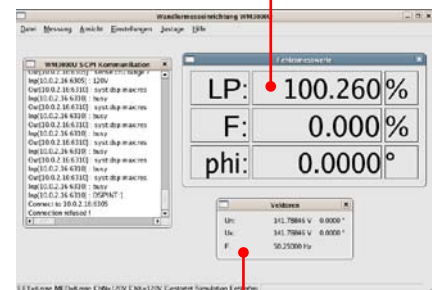
VTs WM3000U

- Conventional voltage transformers (VT) according to IEC60044-2
- Electrical voltage transformers (EVT) according to IEC60044-7
- Non-conventional, digital voltage transformers according to IEC61850-9-2

CTs WM3000I

- Conventional current transformers (CT) according to IEC60044-1
- Electrical current transformers (ECT) according to IEC60044-8
- Non-conventional, digital current transformers according to IEC61850-9-2

Display of load points and measured error values



Measured primary values

Features

- Voltage inputs for VT and EVT with high impedance direct input (WM3000U)
- Current inputs for CT and ECT with high impedance direct input (WM3000I)
- Inputs for non-conventional, digital transformer (100Base-Tx full duplex RJ45)
- User friendly operation via touch screen with integrated graphical user interface
- A/D conversion of measuring value by 24 Bit converter
- Measurement of different currents and voltages via absolute control of all ranges PC interface via Ethernet



Rear side WM3000U

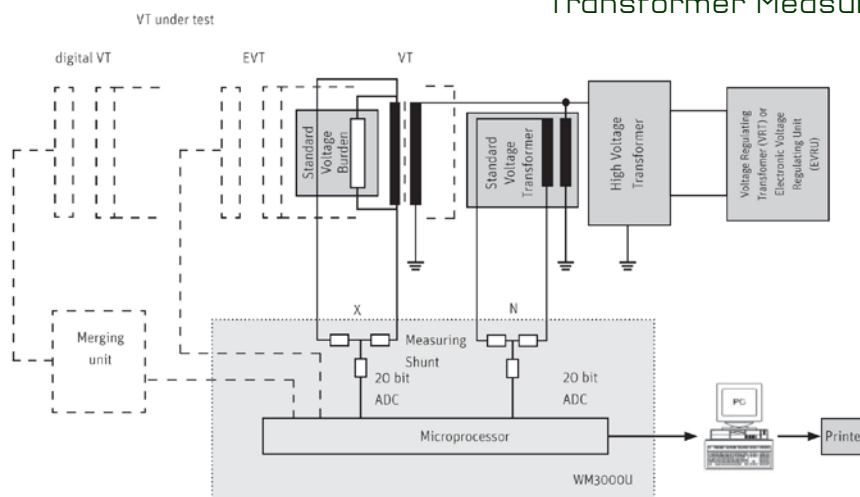
LAN-, USB- and PPS- connection terminal

Conventional Inputs



Rear side WM3000I (Picture for example only)

Principle Diagramm Accuracy Test Voltage transformer testing



Technical Data WM3000U

Voltage Transformer Measuring Bridge WM3000U	
General	
Voltage supply	85 ... 265 V, $\pm 10\%$, 50 ... 60 Hz
Dimensions (HxWxD)	177 x 450 x 450 mm (housing + bow-type handle)
Temperature range	5° ... 40° C
Technical details	
Voltage input N-circuit	2 V ... 500 V
Voltage input X-circuit	20 mV ... 500 V
Frequency range	15 ... 65 Hz
Conventional voltage transformers	
Ratio error	10 V ... 500 V : $\pm 50 \times 10^{-6}$ 2 V ... < 10 V : $\pm 100 \times 10^{-6}$ additional ^{1,2} $\frac{X}{N}$ or $\frac{N}{X}$ in the range 0,5 ... 0,9 : $\pm 50 \times 10^{-6}$ $\frac{X}{N}$ or $\frac{N}{X}$ < 0,5 : $\pm 150 \times 10^{-6}$
Phase displacement	10 V ... 500 V : $\pm 0,2$ min 2 V ... < 10 V : $\pm 0,5$ min additional ^{1,2} $\frac{X}{N}$ or $\frac{N}{X}$ in the range 0,5 ... 0,9 : $\pm 0,2$ min $\frac{X}{N}$ or $\frac{N}{X}$ < 0,5 : $\pm 0,4$ min
Input impedance ³	380 k Ω
Non-conventional, digital voltage transformers according to EN61850	
Ratio error	10 V ... 500 V : $\pm 100 \times 10^{-6}$ 2 V ... < 10 V : $\pm 200 \times 10^{-6}$
Phase displacement	10 V ... 500 V : $\pm 1,1$ min 2 V ... < 10 V : $\pm 1,5$ min
Input impedance ⁴	380 k Ω
Electronical voltage transformers	
Ratio error	200 mV ... 15 V : $\pm 400 \times 10^{-6}$ 20 mV ... < 200 mV : $\pm 600 \times 10^{-6}$
Phase displacement	200 mV ... 15 V : $\pm 0,6$ min 20 mV ... < 200 mV : $\pm 1,1$ min
Input impedance	> 1 G Ω

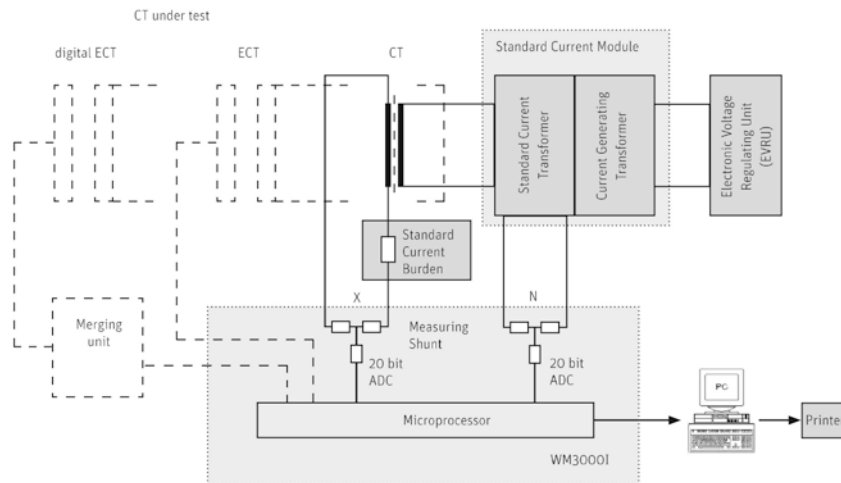
1 to the values mentioned above

3 X- and N-circuit

2 X = input voltage X-circuit; N = input voltage N- circuit

4 N-circuit

Principle Diagramm Accuracy Test Current transformer testing



Technical Data WM3000I

Current Transformer Measuring Bridge WM3000I	
General	
Voltage supply	85 ... 265 V, ± 10 %, 50 ... 60 Hz
Dimensions (HxWxD)	177 x 450 x 450 mm (housing + bow-type handle)
Temperature range	5° ... 40° C
Technical details	
Current input	5 mA ... 15 A
Voltage input for ECTs	20 mV ... 15 V
Frequency range	15 ... 65 Hz
Conventional current transformers	
Ratio error	50 mA ... 15 A : ± 50 x 10 ⁻⁶ 5 mA ... < 50 mA : ± 150 x 10 ⁻⁶ additional ^{1,2} $\frac{X}{N}$ or $\frac{N}{X}$ in the range 0,5 ... 0,9 : ± 50 x 10 ⁻⁶ $\frac{X}{N}$ or $\frac{N}{X}$ < 0,5 : ± 150 x 10 ⁻⁶
Phase displacement	50 mA ... 15 A : ± 0,2 min 5 mA ... < 50 mA : ± 0,5 min additional ^{1,2} $\frac{X}{N}$ or $\frac{N}{X}$ in the range 0,5 ... 0,9 : ± 0,2 min $\frac{X}{N}$ or $\frac{N}{X}$ < 0,5 : ± 0,4 min
Input impedance ³	< 5 mΩ
Non-conventional, digital current transformers	
Ratio error	50 mA ... 15 A : ± 200 x 10 ⁻⁶ 5 mA ... < 50 mA : ± 400 x 10 ⁻⁶
Phase displacement	50 mA ... 15 A : ± 1,1 min 5 mA ... < 50 mA : ± 1,5 min
Input impedance ⁴	< 5 mΩ
Electronical current transformers	
Ratio error	200 mV ... 15 V : ± 400 x 10 ⁻⁶ 20 mV ... < 200 mV : ± 600 x 10 ⁻⁶
Phase displacement	200 mV ... 15 V : ± 0,6 min 20 mV ... < 200 mV : ± 1,1 min
Input impedance	> 1 GΩ

Subject to alterations.

Status: 18th April 2011

1 to the values mentioned above
3 X- and N-circuit

2 X = input current X-circuit; N = input current N- circuit
4 N-circuit