

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

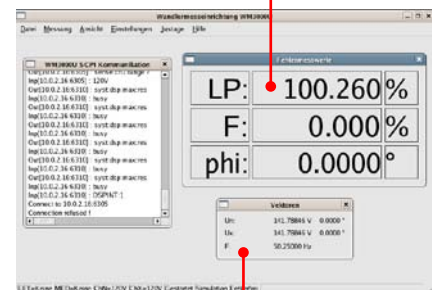
VTs WM3000U

- 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

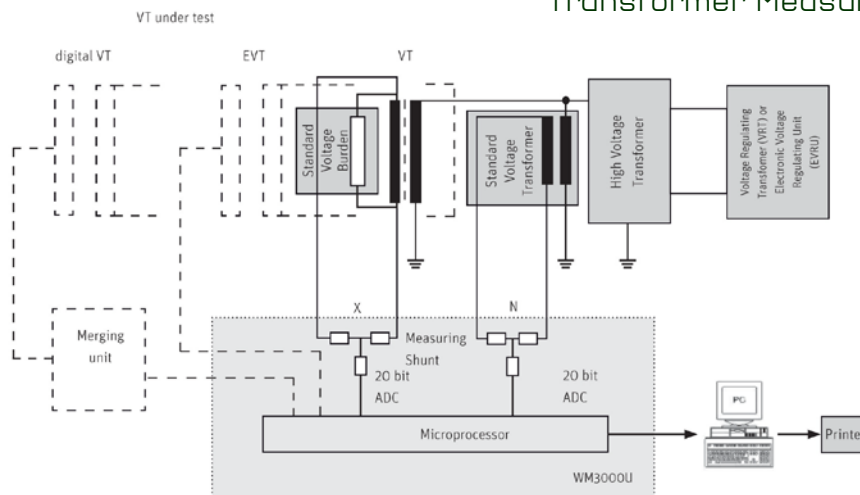
LAN-, USB- and PPS- connection terminal

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 |

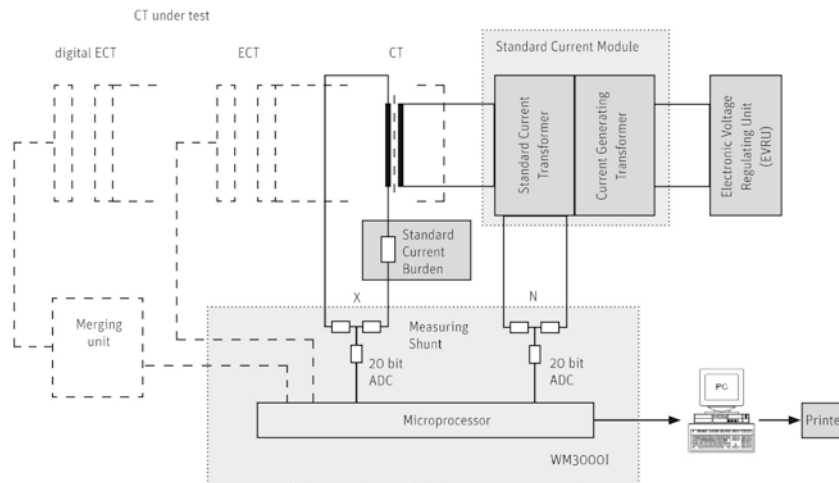
1 to the values mentioned above

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