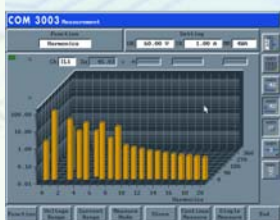


Comparator

Single Phase or Three Phase



U1	U2	U3	U4	U5	U6	U7	U8	U9	U10	U11	U12	U13	U14	U15	U16	U17	U18	U19	U20
100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0



Front View



Concept

By continuation of previous developments the new COM1003 / COM3003 comparator is the new member of the ZERA high precision measuring instrument series.

According to the measuring requirements 2 versions are available: Single phase instrument COM1003 or three phase instrument COM3003. These comparators are common used in metrological institutes. To perform their traceability to national standards also test laboratories, power utilities and meter manufacturer use this kind of high accurate instruments.

Features

- DC capable measuring modes (optional)
- High accuracy, independent of measuring mode
- Excellent long-term stability by using of DC-capable current transformers
- Recalibration period by PTB set for 2 years
- RS232 and IEEE488 interfaces
- SCPI compatible IEEE488 interface commands
- Automatic measuring range selection
- Only one current input for the whole measuring range
- Direct traceability of measuring accuracy by connection of DC- and frequency standard devices

The COM1003 / COM3003 comparator can be controlled by:

- Menu-related function keys and 6.4" colour TFT display, located on the front panel
- Windows (application software SSM3000)

The following functions are selectable by softkeys:

Functions

Indication of:

- Actual values
- Vectorial diagram
- Curves
- Harmonics
- Error measurements

User Software

The SSM3000 control program contained in the scope of supply is an MS Windows application which extends the possible applications of the COM1003 / COM3003 with numbers of additional features.



Display with menu-related function keys

Unless otherwise indicated, all measurement errors are related to sine-wave test parameters in the nominal frequency range and appropriate range selection.

ZERA

COM1003 / 3003

Technical Data

Comparator	COM1003	COM3003
General		
Power supply	115/230 V + 10 % -15 %, 50...60 Hz	115/230 V + 10 % -15 %, 50...60 Hz
Power consumption	approx. 80 VA	approx. 120 VA
Temperature range	15° ... 40° C	15° ... 40° C
Dimensions (HxWxD)	172 x 465 x 460 mm	172 x 465 x 460 mm
Weight	16 kg	25 kg
Reference Meter		
Voltage measurement	30 V ... 500 V	30 V ... 500 V
Voltage ranges	60 - 120 - 240 - 480 V	60 - 120 - 240 - 480 V
Current measurement	1 mA ... 160 A	1 mA ... 160 A
Current ranges	5-10-20-50-100-200-500 mA 1-2-5-10-20-50-100-200 A	5-10-20-50-100-200-500 mA 1-2-5-10-20-50-100-200 A
Reference voltage ranges	1 V and 10 V DC	1 V and 10 V DC
Fundamental frequency	15 ... 70 Hz	15 ... 70 Hz
Bandwidth	DC ... 3500 Hz	DC ... 3500 Hz
Messuring modes	2 wire Active 2 wire Reactive 2 wire DC ³ mixed signals (AC+DC) in all active measuring modes (optional)	4 wire Active 4 wire Reactive true 4 wire Reactive cross 4 wire Reactive Q60 4 wire Apparent 4 wire DC ³ 3 wire Active 3 wire Reactive true 3 wire Reactive cross connected A 3 wire Reactive cross connected B 2 wire Active 2 wire Reactive 2 wire DC ³ mixed signals (AC+DC) in all active measuring modes (optional)
Accuracy class rating according to PTB for measuring power and energy ¹ <i>Independent of measuring mode</i>	< 100 x 10 ⁻⁶	< 100 x 10 ⁻⁶
Recalibration period according to PTB	2 years	2 years
Voltage measurement accuracy	< 30 x 10 ⁻⁶	< 30 x 10 ⁻⁶
Voltage measurement accuracy DC ³	< 50 x 10 ⁻⁶ (30 V ... 500 V)	< 50 x 10 ⁻⁶ (30 V ... 500 V)
Voltage measurement long term stability	< 15 x 10 ⁻⁶ / year	< 15 x 10 ⁻⁶ / year
Current measurement accuracy	< 50 x 10 ⁻⁶ (50 mA ... 160 A) < 70 x 10 ⁻⁶ (10 mA ... < 50 mA) < 150 x 10 ⁻⁶ (1 mA ... <10 mA)	< 50 x 10 ⁻⁶ (50 mA ... 160 A) < 70 x 10 ⁻⁶ (10 mA ... < 50 mA) < 150 x 10 ⁻⁶ (1 mA ... <10 mA)
Current measurement accuracy DC ³	< 350 x 10 ⁻⁶ (50 mA ... 160 A)	< 350 x 10 ⁻⁶ (50 mA ... 160 A)
Current measurement long term stability	< 25 x 10 ⁻⁶ / year	< 25 x 10 ⁻⁶ / year
Power/energy measurement accuracy ² <i>Independent of measuring mode</i>	< 80 x 10 ⁻⁶ (50 mA ... 160 A) < 100 x 10 ⁻⁶ (10 mA ... < 50 mA) < 180 x 10 ⁻⁶ (1 mA ... < 10 mA)	< 80 x 10 ⁻⁶ (50 mA ... 160 A) < 100 x 10 ⁻⁶ (10 mA ... < 50 mA) < 180 x 10 ⁻⁶ (1 mA ... < 10 mA)
Power/energy measurement accuracy DC ³	< 400 x 10 ⁻⁶ (50 mA ... 160 A)	< 400 x 10 ⁻⁶ (50 mA ... 160 A)
Power/energy measurement long term stability	< 30 x 10 ⁻⁶ / year	< 30 x 10 ⁻⁶ / year
Angle measurement error	< 0.005°	< 0.005°
DC reference voltage measurement	< 20 x 10 ⁻⁶	< 20 x 10 ⁻⁶
DC reference voltage measurement long term stability	< 5 x 10 ⁻⁶ / year	< 5 x 10 ⁻⁶ / year
Temperature drift	U < 0.5 x 10 ⁻⁶ / K I < 0.5 x 10 ⁻⁶ / K P < 1 x 10 ⁻⁶ / K DC reference input < 1 x 10 ⁻⁶ / K Quartz time base < 0.1 x 10 ⁻⁶ / K	U < 0.5 x 10 ⁻⁶ / K I < 0.5 x 10 ⁻⁶ / K P < 1 x 10 ⁻⁶ / K DC reference input < 1 x 10 ⁻⁶ / K Quartz time base < 0.1 x 10 ⁻⁶ / K
Inputs / Outputs	1 x current 1 x voltage 1 x 1 V and 10 V DC reference input 2 x power proportional pulse output 1 x pulse input for energy comparison measurement 1 x Scanning head input for meter testing 1 x Quartz output for internal time base 1 x RS232 interface 1 x IEEE488 interface 1 x ZERA fibre optics interface 1 x Compact-Flash interface 1 x Keyboard interface 1 x VGA interface	1 x current 1 x voltage 1 x 1 V and 10 V DC reference input 2 x power proportional pulse output 1 x pulse input for energy comparison measurement 1 x Scanning head input for meter testing 1 x Quartz output for internal time base 1 x RS232 interface 1 x IEEE488 interface 1 x ZERA fibre optics interface 1 x Compact-Flash interface 1 x Keyboard interface 1 x VGA interface

Version: 23rd September 2009

¹ Within the range of 30 V ... 500 V and 50 mA ... 160 A
³ only with option DC-measurement

² related to the apparent power each with 30 V ... 500 V

ZERA GmbH
Hauptstr. 392
53639 Königswinter
Germany
Tel: (+49) (0) 2223 704 0
Fax: (+49) (0) 2223 704 70
Email: info@zera.de
Website: www.zera.de