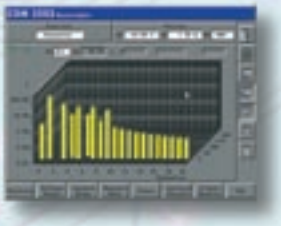
ZERA

COM 1003 / 3003



Comparator

single-phase or three-phase

ZERA®

Comparator COM 1003 / 3003

Front View

By continuation of previous developments the new COM 1003 / COM 3003 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 COM 1003 or three phase instrument COM 3003. These comparators are common used in metrological institutes but also official test laboratories, power utilities and meters manufactures use this kind of high accurate instruments to perform their traceability to national or international standards.

Features

- High accuracy, independent of measuring mode,
- Excellent long-term stability,
- Use of DC-capable current transformers ,
- Recalibration period by PTB (German National Metrology Laboratory) set for 2 years,
- RS 232 and IEEE 488 interfaces,
- SCPI compatible IEEE 488 interface commands,
- Automatic measuring range selection,
- Only one current input for the whole measuring range,
- Direct traceability of measuring accuracy by connection of DC standard and frequency standard devices.

The COM 1003 / COM 3003 comparator can be controlled by :
- menu-related function keys and 6,4" color TFT display, located on the front panel
- Windows (application software SSM 3000).

Functions

The following functions are selectable by softkeys:

Indication of:
- Actual values,
- Vectorial diagram,
- Curves,
- Harmonics,
- Error measurments

Display with menu-related function keys

User Software

The SSM 3000 control program contained in the scope of supply is an MS Windows (95/98/ NT4... application which extends the possible applications of the COM1003/ COM 3003 with numbers of additional features.

Rear View

The following system parameters are displayed as averages values over an adjustable integration time (1s...99s):

- RMS values of phase voltages and currents and their DC component,
- All angles between currents and voltages calculated from the fundamental components,
- Active, reactive and apparent power, per phase or total,
- Frequency and direction of rotating field.

Actual vaulues can be displayed in table form or as vectorial graphic.

The waveforms of voltage and currents can be measured and displayed. The user can choose between display as curves with indication of individual values and harmonic displaying with individual distortion values.

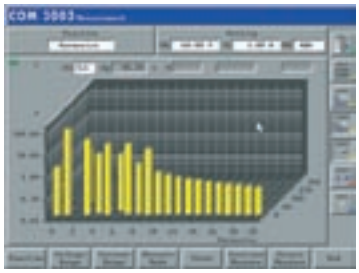
Static and electromechanical power meters as well as all kind of measuring instruments with power proportional frequency output (e.g. reference standards, working standards) can be tested in the menu ‚Accuracy measurement'. The user can select between scanning head input or frequency input.

All measuring results can be stored at incorporated Compact-Flash Cards afterwards. The stored data can be processed to the PC. The device to read out the Compact-Flash Cards is contained in the scope of supply.

Actual Value Measurement

Vectorial Measurement

Curve Measurement



Harmonics Measurement

Accuracy Measurement

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Comparator COM 1003 / 3003

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

Technical Data

Comparator	COM 1003	COM 3003
Power supply	230 V +10% -15%, 50 ... 60 Hz	230 V +10% -15%, 50 ... 60 Hz
Power consumption	approx. 80 VA	approx. 120 VA
Test voltage	30 V ... 500 V	30 V ... 500 V
Voltage ranges	60-120-240-480 V	60-120-240-480 V
Test current	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
Bandwith	DC ... 3500 Hz	DC ... 3500 Hz
Measuring mode	2 wire Active 2 wire Reactive	4 wire Active 4 wire Reactive true 4 wire Reactive cross 4 wire Reactive Q60 4 wire Apparent 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
Accuracy class rating according to PTB for measuring type independent of power and energy in the 30 ... 500 V and 50 mA ... 160 A ranges	< 100 x 10^{-6}	< 100 x 10^{-6}
Recalibration period according to PTB	2 years	2 years
Voltage measurement error	< 30 x 10^{-6}	< 30 x 10^{-6}
Voltage measurement drift	< 15 x 10^{-6} / year	< 15 x 10^{-6} / year
Current measurement error	< 50 x 10^{-6} (50 mA ... 160 A) < 150 x 10^{-6} (10 mA ... 50 mA) < 250 x 10^{-6} (1 mA ...10 mA)	< 50 x 10^{-6} (50 mA ... 160 A) < 150 x 10^{-6} (10 mA ... 50 mA) < 250 x 10^{-6} (1 mA ...10 mA)
Current measurement drift	< 25 x 10^{-6} / year	< 25 x 10^{-6} / year
Power/energy measurement error (related to apparent power irrespective of measurement Type, each with 30 ... 500 V)	< 80 x 10^{-6} (50 mA ... 160 A) < 180 x 10^{-6} (10 mA ... 50 mA) < 280 x 10^{-6} (1 mA ...10 mA)	< 80 x 10^{-6} (50 mA ... 160 A) < 180 x 10^{-6} (10 mA ... 50 mA) < 280 x 10^{-6} (1 mA ...10 mA)
Power/energy measurement drift	< 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 drift	< 5 x 10^{-6} / year	< 5 x 10^{-6} / year
Temperature range	15° ... 40° C	15° ... 40° C
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 Quarz output for internal time base 1 x RS232 interface 1 x IEEE 488 interface 1 x ZERA fibre optics interface	3 x current 3 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 Quarz output for internal time base 1 x RS232 interface 1 x IEEE 488 interface 1 x ZERA fibre optics interface
Max. Dimensions (H x W x D)	172 x 465 x 460 mm	172 x 465 x 460 mm
Weight	16,0 Kg	25,0 Kg

Other Products:

Stationary Test Systems for Electricity Meters

Portable Meter Test Equipment

Stationary and Portable Power Sources

Insulation Testers

Test Systems for Instrument Transformers

Test Systems for Circuit Breakers and Switch Gears

Voltage Stabilizers

Test Equipment for Ripple-Control Receiver

Primary Injection Test Sets

Secondary Injection Test Sets

Stationary and Portable Test Systems for Calibration of Measuring Transducers

Modernisation of Meter Test Systems

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Subject to alterations