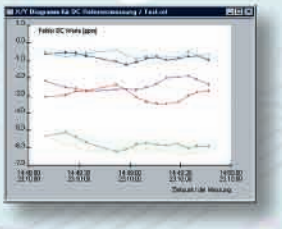
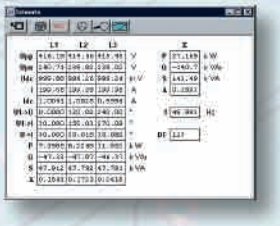
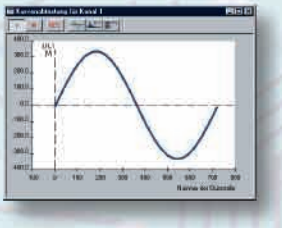
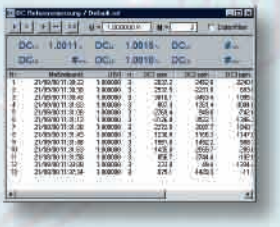
ZERA

RMM 3000 / 3001









Reference Multimeter

ZERA®

Reference Multimeter RMM 3000 / 3001

Front View

As a follow-on to previous developments, the Reference Multimeter RMM has been introduced as a new member of the ZERA precision measuring equipment. Depending on the requirements, there are 2 models available:

- RMM3000 up to 160 ampere,
- RMM3001 up to 16 ampere.

The Reference Multimeter RMM can be used for current, voltage, phase angle and power measurements. Also energy comparison measurements of electricity meters via scanning head or other substandard meters via pulse input is possible.

The RMM can be used for single and polyphase applications. The functionality of RMM is sufficient for metrological institutes, test laboratories of power utilities and electricity meter manufacturers. In combination with the robust transportation case (option) the RMM is also suitable for on site meter tests.

Features

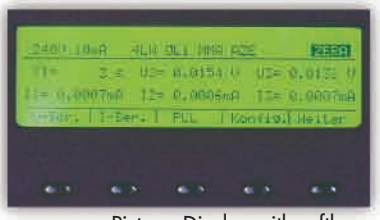
- High accuracy, independent from measurement mode,
- Simple, menu-controlled operation using a front-face LCD display,
- Convenient operation and evaluation, including protocol generation with Windows® based SSM 3000 operator software,
- RS 232 interface.

RMM reference multimeters can be operated manually using the front LC display and 5 menu-related function keys.

Functions

The following functions can be called up via soft keys:

- Actual values,
- Meter accuracy testing,
- Energy comparison measurement,
- Reference measurement.



Picture: Display with softkeys

User Software

The SSM 3000 control program runs under MS Windows® application (95/98/2000/ME/NT4/...). The software is increasing the functionality of RMM by a multiplicity of additional features.

Actual Value Display

The following measurements in an three phase AC system are displayed as mean values:

- Individual voltage and current rms values,
- All phase angles
- Active, reactive and apparent power, with power factors
- Frequency and phase indication
- DC components

Rear View

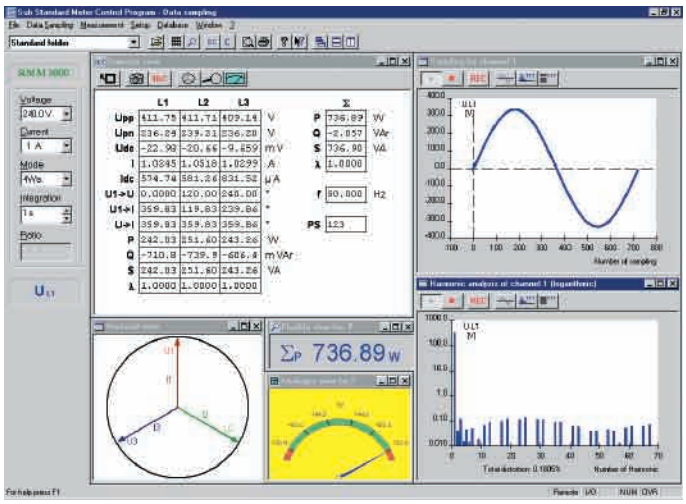
Picture: Rear view RMM 3000

The actual values can be displayed as an overview with all values, as display of individual values, view as a measuring instrument or as graph. In addition, measurements over long periods are possible, to allow their long-term behaviour to be analysed. The SSM 3000 software is used to read out voltage and current waveforms. The values can be displayed graphically, as a logarithmic frequency spectrum giving the relative harmonic content, or as a list of Fourier coefficients.

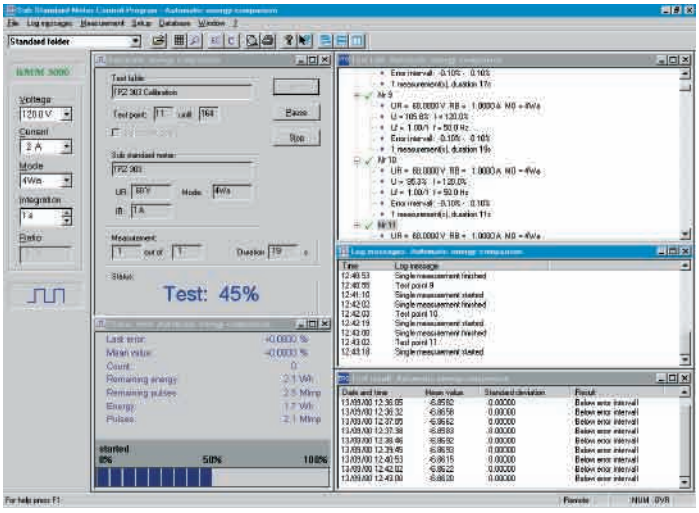
Curve Sampling

Energy Comparison Measurement

With Energy comparison measurement, RMM is able to test other substandard meters with a pulse output proportional to the power. Static and mechanical electricity meters can be tested with RMM during the Accuracy Test. A scanning head (option) is required for this test.
Manual and automatic operating modes are provided for both tests.



Accuracy Test



All test data relevant to the test (parameters and control codes for the item under test, switch-on sequence, tolerance ranges...) are stored in databases and can therefore be reused.

The test results from databases can be statistically analyzed with the SSM 3000 software protocol function, printed out in the different display forms, and exported into MS Excel files.

ZERA®

Reference Multimeter RMM 3000 / 3001

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

Technical Data

Referenz Multimeter	RMM 3000	RMM 3001
Power supply	230V +10% -15%, 47... 63 Hz	230V +10% -15%, 47... 63 Hz
Power consumption	< 80 VA	< 80 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 ... 16 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 A
Fundamental frequency	15 ... 70 Hz	15 ... 70 Hz
Bandwith	DC ... 3500 Hz	DC ... 3500 Hz
Measuring mode	4 wire Active 4 wire Reactive true 4 wire Reactive geometric 4 wire Reactive cross 4 wire Reactive Q60 4 wire Reactive Q60 cross 4 wire Apparent 4 wire Apparent geometric 3 wire Active 3 wire Reactive true 3 wire Reactive geometric 3 wire Reactive cross connected A 3 wire Reactive cross connected B 3 wire Reactive Q60 3 wire Reactive Q60 cross 3 wire Apparent 3 wire Apparent geometric	4 wire Active 4 wire Reactive true 4 wire Reactive geometric 4 wire Reactive cross 4 wire Reactive Q60 4 wire Reactive Q60 cross 4 wire Apparent 4 wire Apparent geometric 3 wire Active 3 wire Reactive true 3 wire Reactive geometric 3 wire Reactive cross connected A 3 wire Reactive cross connected B 3 wire Reactive Q60 3 wire Reactive Q60 cross 3 wire Apparent 3 wire Apparent geometric
Voltage measurement error (referred to the range limit)	< 100 x 10^{-6}	< 100 x 10^{-6}
Voltage measurement drift	< 30 x 10^{-6} / year	< 30 x 10^{-6} / year
Current measurement error (referred to the range limit)	< 100 x 10^{-6} (50 mA ... 160 A) < 300 x 10^{-6} (1 mA ... 50 mA)	< 100 x 10^{-6} (50 mA ... 16 A)
Current measurement drift	< 70 x 10^{-6} / year (1 mA ...16 A) < 200 x 10^{-6} / year (16 A ...160 A)	< 70 x 10^{-6} / year (1 mA ...16 A)
Power/energy measurement error in the ranges 30 ... 500 V (related to apparent power irrespective of measurement Type)	< 200 x 10^{-6} (50 mA ... 160 A) < 400 x 10^{-6} (1 mA ... 50 mA)	< 200 x 10^{-6} (50 mA ... 16 A) < 400 x 10^{-6} (1 mA ... 50 mA)
Power/energy measurement error independent of the type of measurement, in the ranges 30 ... 500 V and 100 mA ... 16 A at PF=0.5i, 0.8c and 1 (referred to the value read off with optimum range selection)	< 200 x 10^{-6}	< 200 x 10^{-6}
Power/energy measurement drift	< 100 x 10^{-6} / year (50 mA ...16 A) < 200 x 10^{-6} / year (16 A ...160 A)	< 100 x 10^{-6} / year (50 mA ...16 A)
Angle measurement error	< 0,01°	< 0,01°
Temperature range	15°... 40° C	15°... 40° C
Temperature drift	U < 2,5 x 10^{-6} / K I < 5,0 x 10^{-6} / K P < 7,5 x 10^{-6} / K	U < 2,5 x 10^{-6} / K I < 5,0 x 10^{-6} / K P < 7,5 x 10^{-6} / K
Inputs / outputs	3 x current (fused 1 mA ... 16 A) 3 x current (10 A ... 160 A) 3 x voltage 2 x pulsed output 1 x pulsed input 1 x Scanning head input for meter testing 1 x RS232 interface 1 x bit-bus interface 1 x ZERA fibre optics interface	3 x current (fused 1 mA ... 16 A) 3 x voltage 2 x pulsed output 1 x pulsed input 1 x Scanning head input for meter testing 1 x RS232 interface 1 x bit-bus interface 1 x ZERA fibre optics interface
Dimensions	132 x 483 x 460 mm (19"-rack-mounted model) 152 x 465 x 460 mm (Desktop model)	132 x 483 x 460 mm (19"-rack-mounted model) 152 x 465 x 460 mm (Desktop model)
Weight	13 Kg	9 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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