REFERENCE STANDARD RS

Precision standard meter for electrical power and energy measurement

The Reference Standard has a single- and three-phase version of precision meter for electrical power and energy measurement. The Reference Standard is designed to meet all requirements put on a reference standard in a single- and three-phase electricity meter testing and calibration systems. The Reference Standard can be set to any true or artificial mode of operation in three phase system and is capable to evaluate individual quantities in any phase and three-phase cumulative quantities as well.

Reference Standard is based on precision 24-bit A/D conversion and on digital signal processing technology, enabling accurate evaluation of all main and informative quantities. Beyond measurement of all kinds of power, voltage, current and phase, the meter measures a harmonic content and a distortion of the input signals.

The meter constant of Reference Standard generating value-proportional impulses on the frequency output are free programmable. This unique feature along with the extremely high maximum output frequency, exceeding 2 MHz allows precision error evaluation of tested meters even within the shortest integration periods. The impulse output can be assigned to various quantities. Additionally, the impulse output can be set to generate any precise constant frequency for testing purposes.

The Reference Standard is equipped with three fully independent differential voltage input circuits. Therefore the meter can be configured to evaluate signals on three independent channels. This feature in combination with possibility to assign the impulse output to any combination of the input channels, enables application of the device for example in single-phase system with one channel as a reference, while the free channels can monitor additional information, like power consumption of the current and voltage circuits or contact error in the test circuit.

Optional equipment permits usage of the Reference Standard with three independent individually programmed impulse outputs, what enables to triple the testing capacity of the three-phase test system, when testing single-phase meters.

Reference Standard 2x10 (front view)

Reference Standard 1x10 (front view)

Reference Standard x110 (back view)

Reference Standard x310 (back view)

Available Models

Model	Class	Phases	Display & Keypad
RS 1110A	0.05	1	NO
RS 2110A	0.05	1	YES
RS 1310A	0.05	3	NO
RS 2310A	0.05	3	YES
RS 2110E	0.02	1	YES
RS 2310E	0.02	3	YES
RS 2110S	0.01	1	YES
RS 2310S	0.01	3	YES

Technical parameters

Fundamental frequency range	40 .. 70 Hz
Voltage range	0.5 .. 500 V
Current range	1 mA .. 120 A, optionally up to 240 (3000) A
Power factor range	0 .. 1 (four-quadrants measurement)
Interfaces	RS 232 (IEEE 488 optional) with SCPI compatible programming protocol
Meter Testing	up to 3 error calculators* for simultaneous testing of influence of electromechanical or static meters or reference standards evaluated directly by RS

Measurements Modes

- Active power and energy in 6-wire mode (3 independent channels)
- Active power and energy in 4-wire mode
- Active power and energy in 3-wire mode
- Reactive power and energy in 4-wire natural mode
- Reactive power and energy in 4-wire artificial (cross-connected) mode
- Reactive power and energy in 3-wire artificial (cross-connected) mode

Maximum error	**RS xx10A**	**RS xx10E**	**RS xx10S**
Voltage	0.05 %	0.02 %	0.005 %
Current	0.05 %	0.02 %	0.005 %
Apparent Power	0.05 %	0.02 %	0.01 %
Active Power *	0.05 %	0.02 %	0.01 %
Reactive Power *	0.05 %	0.02 %	0.01 %
Frequency	0.005 Hz	0.005 Hz	0.005 Hz
Distortion	0.05 %	0.05 %	0,.05 %

** related to the Apparent Power*

Impulse output	
Number of outputs	one (three independent optional)
Impulses assigned to	Active Energy, Reactive Energy, Apparent Energy, Square U or I, constant frequency (any combination of input channels)
Meter constant of impulses	any real number set by user
Maximum Impulse frequency	> 2 MHz

Options

- Current extender 240 A/5 A
- Flexible current probe 3000 A
- Current clamp 120 A
- Error calculator OPS 200
- 3 independent impulse outputs
- Interface IEEE 488
- Portable version with case

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