



## RD-23 PORTABLE SINGLE-PHASE REFERENCE STANDARD

- Typical Accuracy: within traceability uncertainties
- Worst Case Accuracy:  $\pm 0.01\%$  @ PF $\geq 0.5$

## INTRODUCTION

The portable RD-23 single-phase reference standard is one of the most versatile reference instruments ever. The RD-23 has a worst case accuracy of  $\pm 0.01\%$  for all measurement functions across its entire operating range, with a typical accuracy that is within traceability uncertainties. This worst case accuracy specification includes the variables of stability, power factor, traceability uncertainty and test system errors.

A unique design makes the RD-23 unsurpassed in its ability to accurately measure "real world" waveforms. The RD-23 reference meter, includes an exclusive analog to digital signal converter. The RD-23 built-in converter is combined with Radian Research's renowned electronically compensated voltage and current input transformers and a hermetically sealed reference. This combination-provides the highest degree of accuracy, stability and versatility offered in a portable three-phase standard.

## CHARACTERISTICS

The compact light weight design of the RD-23 makes it an ideal reference standard for field testing applications. The RD-23 may be used with a controlled current source to accurately test revenue meters. In field applications the RD-23 can perform a single-phase meter accuracy test using existing service loads. Pickups to sense meter disk rotation or calibration pulses of infrared, visible light, or KYZ signals plug directly into the RD-23. It can be utilized to test reference standards of lesser accuracy and is also an ideal standard to be intergraded within a meter test bench where lower accuracy is acceptable.

## TECHNICAL DATA

Current range	1 × 1mA ... 120 (200 / 225)A <sup>(1)</sup> auto-ranging
Voltage range	1 × 30 ... 600V auto-ranging
Auxiliary power range	1 × 60 ... 600V auto-ranging
Frequency of the fundamental	40 ... 70Hz <sup>(2)</sup>
Power Factor range	Any
Operating temperature range	-20°C ... +70°C
Humidity	0 ... 95%, non-condensing
Measurement modes	2 wire active and reactive
Measuring functions	Four quadrant, single-phase, simultaneous measurement of : <ul style="list-style-type: none"> <li><input type="checkbox"/> energy (active, reactive, apparent)</li> <li><input type="checkbox"/> power (active, reactive, apparent)</li> <li><input type="checkbox"/> voltage</li> <li><input type="checkbox"/> current</li> <li><input type="checkbox"/> power factor</li> <li><input type="checkbox"/> phase angle</li> <li><input type="checkbox"/> harmonics</li> </ul>
Accuracy	Typical Accuracy: within traceability uncertainties Worst Case Accuracy: $\pm 0.01\%$ @ PF $\geq 0.5$
Temperature influence outside normal operating temperature range	$\pm 0.00025\%/^{\circ}\text{C}$ ( $\pm 2.5$ ppm/ $^{\circ}\text{C}$ )
Accuracy of angle	$\pm 0.003^{\circ}$
Display Gate input	BNC with 150 ohms pull up to 5 volts, clamped at 5.7 volts
Gate Rate	200ns pulse width minimum, maximum 20Hz repetition rate
Output type	Open collector, clamped at 27 volts
BNC pulse output default value	0.00001Wh/pulse but may be reprogrammed
Output type	Max 2.1MHz (200ns pulse width minimum)
Display	On demand
Other possible features (upon request)	Built-in comparator Harmonic analysis (up to 50 <sup>th</sup> )

(1) Operating range. Specified range from 10mA to maximum current.

(2) Operating range. Specified range from 45 to 65Hz.

For additional technical details, please contact our sales department ([sales@metertest.eu](mailto:sales@metertest.eu))

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