

Programmable RLC Meter

RLC 100



◆ Features

- 0.5% basic accuracy
- The measuring frequency – 1KHz
- Measuring time – max 400ms
- Automatic measurement of the main parameters
- Automatic selection of measuring range
- Compensation of the residual adapter capacity
- Polarization voltage internal
- Display of deviation from reference components absolute or relative
- Equivalent connection – series or parallel connection
- Internal test (self diagnosis)
- RS – 232C interface
- Radio interference suppression – EN55011 Class B
- Safety class – I according to EN61010 Part1

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◆ Technical Specification of RLC 100 Automatic RLC Meter

Specification

Measuring parameters	R,L,C,Q(D), Δ , δ
Equivalent connection	series or parallel connection
Connection of the measuring object	four wire line with Kelvin terminals
Measuring frequency	1KHz $\pm 3\%$
Measuring voltages	<2V
Selection of measuring range	automatically or within fixed range
Polarization of the measuring range	internal voltage source, approx.2V
Measuring time	Max 400mS for R,L,C, Δ , δ Approx. 1.2S for Q(D) in fixed range

Measuring Range of Parameters

Measuring	Measuring range	
	form	to
R	1m Ω	1.999M Ω
L	0.1uH	199.9H
C	0.1pF	1.999mF
Q_R	0.001	>1.200
Q_L	<0.1	199
D_C	0.001	>1.200
δ	-100.0%	+199.9%

Measuring Tolerances of R measurement

Equivalent connection	Series connection					Parallel connection		
	0	1	2	3	4	5	6	7
Measuring range R [Ω]		2	20	200	2k	20k	200k	2M
Measuring error R	-	$\pm 2\%$ $\pm 3\text{dig}$	$\pm 1\%$ $\pm 3\text{dig}$		$\pm 0.5\%$ $\pm 2\text{dig}$		$\pm 1\%$ $\pm 2\text{dig}$	$\pm 2\%$ $\pm 3\text{dig}$
Measuring error Q		$\pm 3\%$ ± 0.001	$\pm 3\%$ 0.005	$\pm 2\%$ ± 0.005	$\pm 2\%$ ± 0.005	$\pm 2\%$ ± 0.005	$\pm 3\%$ ± 0.005	$\pm 3\%$ ± 0.008

Additional error for R measurement in response to Q : $0.5 \times Q$ [%]

Note : The specific measuring tolerances are indicated at a nominal temperature of $23^\circ\text{C} \pm 2^\circ\text{C}$

The measuring tolerances are raised by 50% per 10°C deviation in the range of the operating temperature. The measuring tolerances apply to measuring value displays greater than 10% of the measuring range i.e. for displays in the range of 200 to 1999.

The following conditions must be fulfilled at the same time

$D_C < 1$, $Q_R < 1$ or $Q_L > 1$ and $C < 200\text{pF}$ (referring to ground).

Measuring Tolerances of L measurement

Equivalent connection	Series connection					Parallel connection		
	0	1	2	3	4	5	6	7
Measuring range L [H]		200u	2m	20m	200m	2	20	200
Measuring error L		$\pm 2\%$ $\pm 3\text{dig}$	$\pm 1\%$ $\pm 3\text{dig}$		$\pm 0.5\%$ $\pm 2\text{dig}$		$\pm 1\%$ $\pm 2\text{dig}$	$\pm 2\%$ $\pm 3\text{dig}$
Measuring error Q		$\pm 10\%$ $\pm 2\text{dig}$			$\pm 10\%$ $\pm 1\text{dig}$			$\pm 10\%$ $\pm 2\text{dig}$

Additional error for L measurement in response to Q : $0.5 \times Q$ [%]. Is not specified for $Q > 50$.

Measuring Tolerances of C measurement

Equivalent connection	Series connection					Parallel connection		
	0 2m	1 200u	2 20u	3 2u	4 200n	5 20n	6 2n	7 200p
Measuring error C	±2% ±8dig	±2% ±5dig	±1% ±3dig	±0.5% ±2dig			±1% ±2dig	±2% ±3dig
Measuring error D	not specif.	±3% ±0.01	±2% ±0.005	±2% ±0.005	±2% ±0.005	±2% ±0.005	±2% ±0.005	±3% ±0.01

Additional error for C measurement in response to D : $0.5 \times D$ [%]

The measuring error for D measurement is specified only when $C \geq 100\text{pF}$.

General Data

Nominal temperature	+23℃ ±2℃
Operating temperature	+5℃...+40℃
Relative humidity	20 to 80%
Atmospheric pressure	70 to 106KPa
Operating position	horizontal or inclined by ±15°
Operating voltage	sinusoidal alternating voltage (distortion factor < 5%) 115/230V(+10%/ -15%), internally switchable, 50 – 60Hz (±5%)
Power consumption	max. 8 W
Fuses	T32 L/250 V (230V~) T63 L/250 V (115V~)
Safety class	I according to DIN EN 61010 Part 1 (VDE 0411 Part 1), 3/94
Radio interference suppression	EN 55011 Class B, Vfg 1046.1984, VDE0871 Category B
Dimensions (W × H × D)	225mm × 85mm × 200mm
Weight of RLC 100	approx. 1.8kg

Accessories supplied with the package

Mains cable, Measuring cable, Operating instructions, Spare fuses.

System Interfaces

The RLC 100 can be fully controlled and can be read out via the serial interface RS-232C.

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