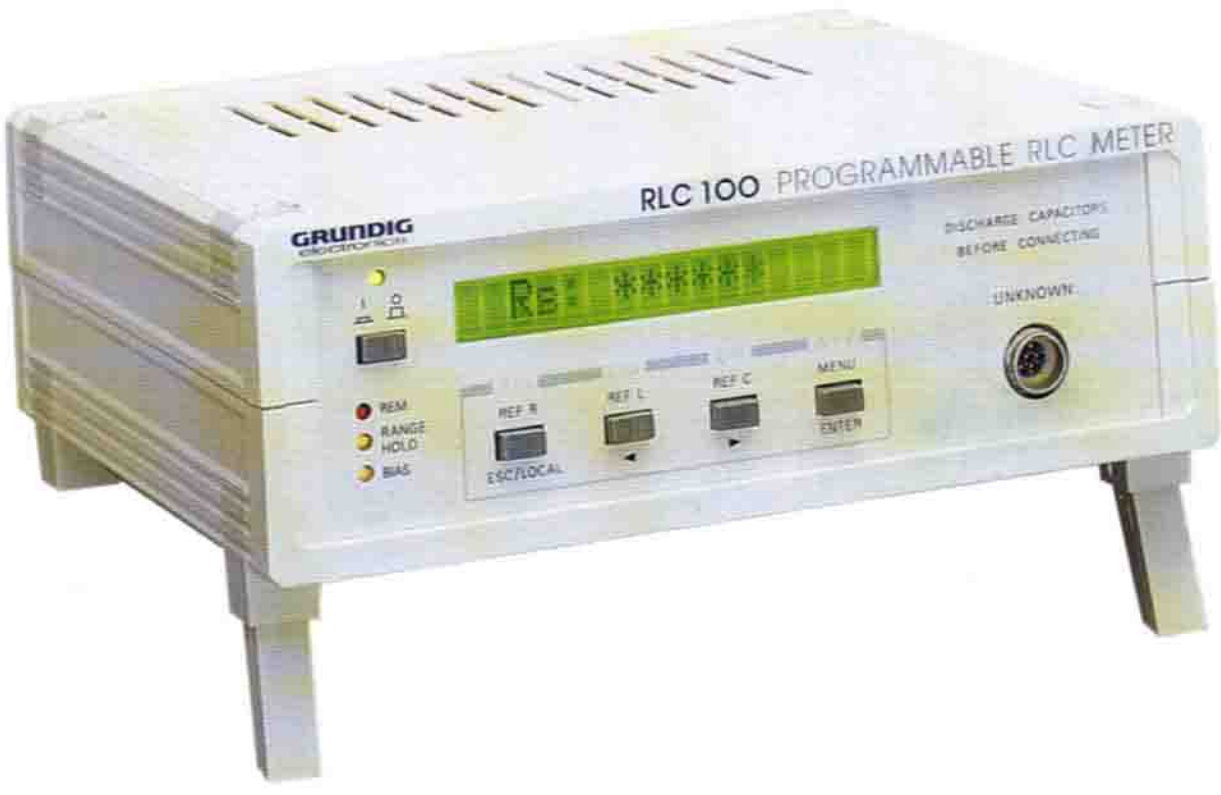
Automatic RLC Meter RLC 100

digimess® compact

Order No.: H.UC 31-00



The RLC 100 is a compact RLC Meter with excellent features. With its basic accuracy of 0.5% the RLC 100 is the right measuring instrument for the Parameter measurement of passive components in daily laboratory and service work, the cost effective alternative to the more expensive precision RLC measuring instruments in the GRUNDIG electronics ***digimess***® range. The fully automatic choice of the measuring range of the RLC 100 allows fast working. The measuring objects are connected up by means of two grip clamps. The tried-and-tested 4-line connection effectively suppresses stray capacitance. In addition to compensation of (the adapter residual capacity by simply pressing a button) this ensures a maximum measuring accuracy even with small L and C values. The internal polarization voltage allows the C measurement at electrolytic capacitors. It goes without saying that the RLC 100 is also suitable for random tests of components.

Deviations of test samples from the reference components can be represented either absolutely i.e. directly in numerical values of the respective measuring unit or relatively in percentage.

The RLC 100, like all other devices of the GRUNDIG electronics ***digimess***® series , is controlled by a microprocessor. Allowing simple operation by means of our *"quattro Key"* operating concept, device self-diagnosis and complete remote control via standard interface RS 232 C.

The 16-digit alphanumeric display line with background illumination always informs you about all measuring and preset values. Due to its excellent price/performance ratio this RLC will be applied in production, service and training.

The Operating Philosophy

GRUNDIG ***digimess***® devices are logical, operating your RLC 100 is "child's play", by means of only 4 function keys!

The Function Levels

Firstly, and most importantly, this is the "secret" of the clearly arranged function levels of the RLC 100.

❶ Choose the primary measuring function directly by pressing the corresponding function key for a **short time**.

❷ Choose the extended measuring function by pressing the corresponding function key for a **long time** (t>1s).

❸ Choose the MENU by pressing the corresponding function keys for a **long time** (t > 1 s), the keys now have alternative meanings.

The User Guide

The RLC 100 "shows text in clear"! Simply follow the MENU guide in order to set individual special functions.

Technical Data

General Data

Nominal temperature	+23 °C ± 2 °C
Operating temperature	+5 °C ... +40 °C
Relative humidity	20 to 80%
Atmospheric pressure	70 to 106 kPa
Operating position	horizontal or inclined by ± 15°
Operating voltage	sinusoidal alternating voltage (distortion factor < 5%) 115/230 V (+10%/–15%), internally switchable, 50 to 60 Hz (± 5%)
Power consumption	max. 8 W
Fuses	T 32 L/250 V (230 V~) T 63 L/250 V (115 V~)
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, VDE 0871 Category B
Dimensions (L × H × D)	225 mm × 85 mm × 200 mm
Dimensions of packing	310 mm × 110 mm × 265 mm
Weight of RLC 100 incl. packing and accessories	 approx. 1.8 kg approx. 2.6 kg

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 frequencies	1 kHz ± 3%
Measuring voltages	< 2 V
Selection of measuring range	automatically or within fixed range
Polarization of the measuring object	internal voltage source, approx. 2 V
Measuring time	max 400 ms for R, L, C, Δ, δ approx. 1.2 s for Q (D) in the fixed range

Measuring Range of Parameters

Measuring parameters	Measuring range from		to
R	1 mΩ	–	1.999 MΩ
L	0.1 μH	–	199.9 H
C	0.1 pF	–	1.999 mF
Q_R	0.001	–	> 1.200
Q_L	< 1.0	–	199
D_C	0.001	–	> 1.200
δ	– 100.0%	–	+ 199.9%

Table 1: Measuring range of parameters

Measuring Tolerances of Measuring Ranges

Note: The specific measuring tolerances are indicated at a nominal temperature of 23 °C ± 2 °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 pF (referring to ground).

Equivalent connection	Series connection					Parallel connection		
Measuring range R [Ω]	0 –	1 2	2 20	3 200	4 2 k	5 20 k	6 200 k	7 2 M
Measuring error R	–	± 2% ± 3 dig	± 1% ± 3 dig	± 0,5% ± 2 dig			± 1% ± 2 dig	± 2% ± 3 dig
Measuring error Q	–	± 3% ± 0.01	± 3% ± 0.005	± 2% ± 0.005	± 2% ± 0.005	± 2% ± 0.005	± 3% ± 0.005	± 3% ± 0.008

Additional error for R measurement in response to Q: **0.5 × Q [%]**

Table 2: Measuring Tolerances of R measurement

Equivalent connection	Series connection					Parallel connection		
Measuring range L [H]	0 –	1 200 μ	2 2 m	3 20 m	4 200 m	5 2	6 20	7 200
Measuring error L	–	± 2% ± 3 dig	± 1% ± 3 dig	± 0.5% ± 2 dig			± 1% ± 2 dig	± 2% ± 3 dig
Measuring error Q	–	± 10% ± 2 dig	± 10% ± 1 dig					± 10% ± 2 dig

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

Table 3: Measuring Tolerances of L measurement

Equivalent connection	Series connection					Parallel connection		
Measuring range C [F]	0 2 m	1 200 μ	2 20 μ	3 2 μ	4 200 n	5 20 n	6 2 n	7 200 p
Measuring error C	± 2% ± 8 dig	± 2% ± 5 dig	± 1% ± 3 dig	± 0.5% ± 2 dig			± 1% ± 2 dig	± 2% ± 3 dig
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 × D [%]**
The measuring error for D measurement is specified only when C ≥ 100 pF.

Table 4: Measuring Tolerances of D measurement

Display

The RLC 100 is equipped with a 16-digit alphanumerical LC matrix display with lighting. It indicates measuring parameters, operating modes, measuring values with the current measuring unit as well as the functions by menu and system messages.

Remote Control

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

Data transmission rate	1,200 to 9,600 Bd
Length of data character	8 bit
Number of STOP bits	1
Parity	none
Protocol	RTS/CTS, without (NONE)

End characters on receiving	LF (10 dec.)
End characters on transmission	CR + LF (13 dec. + 10 dec.)
Length of input buffer	64 characters
Length of output buffer	256 characters