## 28. COP-LCR (Measuring Bridge for L, C and R)

COP-LCR   611246300

The COP-LCR is a measuring bridge for accurate In-
ductivity (L), Capacity (C) and Resistance (R) meas-
urements. For the measurements, you can choose be-
tween serial or parallel spare circuit. The measuring
voltage can be ± 2VRMS. In addition, an overlapping
bias offset of ± 10V can be used for measuring the
voltage.
Apart from the L, C and R measurements, the DC volt-
age can also be used to measure a diode.
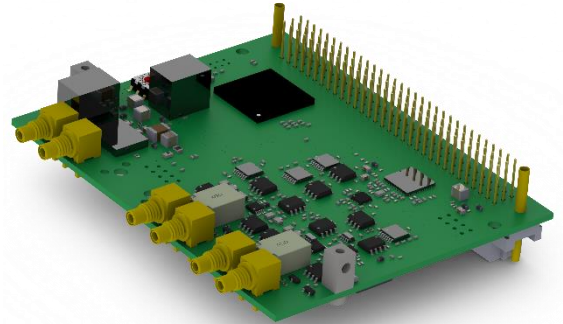
28.1. Technical Specifications

LCR Measuring Connectors			
Number of measuring inputs	1		
Measuring frequencies	0 to 1,000,000	Hz	
Measuring voltages	± 2	V_{RMS}	
Bias offset voltages	± 10	V_{DC}	
Input impedance (HP-HC and LP-LC)	1	GΩ	
Sampling rate	25	MHz	
Measuring Accuracy[1]			
Resistance: ranging from 1Ω to 10Ω (Rs_Q)	0.5		%
Resistance: ranging from 10Ω to 1kΩ (Rs_Q)	0.1		%
Resistance: ranging from 1kΩ to 1MΩ (Rp_Q)	0.3		%
Resistance: ranging from 1MΩ to 10MΩ (Rp_Q)	0.8		%
Capacity: ranging from 100pF to 1nF (Cp_D)	1.0		%
Capacity: ranging from 1nF to 100nF (Cp_D)	0.3		%
Capacity: ranging from 100nF to 10uF (Cs_D)	0.2		%
Capacity: ranging from 10uF to 1mF (Cs_D, 100Hz)	0.8		%
Inductance: ranging from 1uH to 10uH (Ls_Q)	5.0		%
Inductance: ranging from 10uH to 10mH (Ls_Q)	1.0		%
Inductance: ranging from 10mH to 5H (Lp_Q)	1.0		%

1)   The measuring accuracy is specified as a relative error against the Hameg LCR Bridge (HM8118).

Temperature Behaviour[2]				
	0°C	20°C	40°C	Δ
Resistance: 1Ω	0.4	0.1	0.1	%
Resistance: 100kΩ	0.2	0.15	0.2	%
Capacity: 100nF	0.8	0.4	0.15	%
Capacity: 10uF	0.3	0.15	0.01	%
Inductance: 3uH	6.0	0.7	2.0	%
Inductance: 5H	0.4	0.2	0.15	%
Drift Behaviour[3]				
Resistance: 1Ω	Time up to 1‰ of drift	14		h
	Noise	0.1		%
Resistance: 100kΩ	Time up to 1‰ of drift	>48		h
	Noise	0.025		%
Capacity: 100nF	Time up to 1‰ of drift	>48		h
	Noise	0.014		%
Capacity: 10uF	Time up to 1‰ of drift	42		h
	Noise	0.015		%
Inductance: 3uH	Time up to 1‰ of drift	22		h
	Noise	1.2		%
Inductance: 5H	Time up to 1‰ of drift	17		h
	Noise	0.015		%
Module				
Maximum power consumption at 24V node power supply[4]	1.0			A

2) The temperature difference is specified as a relative difference between three various COP-LCR nodes.
3) The drift behaviour is specified via time until 1‰ of the value is changed and via relative difference in case of noise.
4) The maximum power consumption is highly dependant on the connected DUT.

28.2. Notes on the Use

‣ The COP-LCR needs to be calibrated after the operating temperature is reached (15min after power on).
  · Calibration should be done every twelve hours.
  · Calibration is absolutely required after rebooting or when changes are made to the measurement setup. Replacement of measuring probes or cables or rearrangement of the measuring setup are deemed to be a change.
‣ Maintain a constant ambient temperature.
  · If possible, maintain the ambient temperature constantly at 20°C.
‣ To ensure high accuracy of measurements, synchronise the COP-LCR with reference components.

28.3. Maintenance and Calibration

To ensure the correctness of readings, it is recommended calibrating the COP-LCR once a year. To do that, please return your equipment to Indel AG.

28.4. Pin Assignment
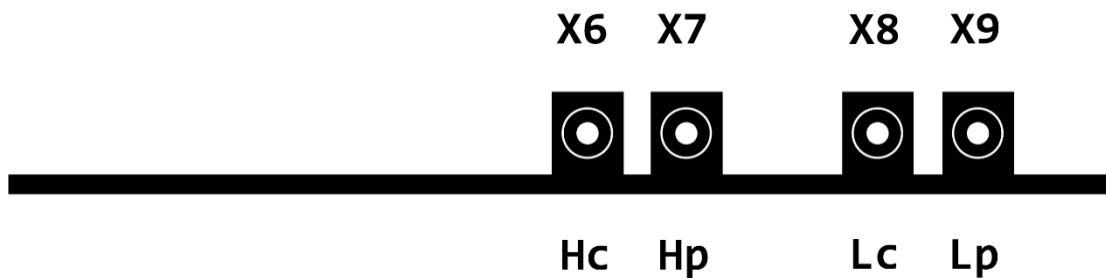
‣ Hc: High current
‣ Hp: High potential
‣ Lc: Low current
‣ Lp: Low potential

28.5. Available Options

Item Number	Label	Option	Description
611246300	COP-LCR		1 x measuring input for L, C, R and a diode