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HAMEG Instruments
A Rohde & Schwarz Company

# HM8018
# LCR-Meter
# Technical Data


## Key facts

- Measurement functions: L, C, R, Θ, Q, D, |Z|
- Basic accuracy 0.2%
- 5 measurement frequencies: 100 Hz, 120 Hz, 1 kHz, 10 kHz, 25 kHz
- Max. Resolution: 0.001 Ω, 0.001 pF, 0.01 µH
- 2- and 4-wire measurement
- Measurement of serial and parallel components
- Bias voltage for electrolyt capacitors
- Mainframe HM8001-2 required for operation

# Technical Data

## LCR-Meter
## HM8018

Valid at 23 degrees C after a 30 minute warm-up period.

| Measuring functions and -conditions | |
|---|---|
| Measuring modes: | R, L, C, Θ, Q/D, \|Z\| |
| Equivalent circuits: | serial, parallel |
| Measuring method: | 2-wire, 4-wire |
| Measuring ranges: | R: 0,001 Ω ... 99,9 MΩ |
| | C: 0,001 pF ... 99,9 mF |
| | L: 0,01 µH ... 9999 H |
| | Q: 0,0001 ... 99,9 |
| | D: 0,0001 ... 9,9999 |
| | Θ: -180,00° ... +180,00° |
| Basic accuracy: | 0,2 % |
| Measuring frequencies: | 100 Hz, 120 Hz, 1 kHz, 10 kHz, 25 kHz |
| Freq. accuracy: | ±100 ppm<br>(except 120 Hz: 120.2 Hz ±100 ppm) |
| Measuring voltage: | 0,5 Vrms ±10% (unloaded)) |
| Measuring rate: | 2 measurements/second |
| Range selectable: | automatic, manual |
| DC Bias voltage: | 1 V ±10% |
| Zero setting: | Open/short circuit compensation |
| Compensation limits: | |
| Short: | R <10 Ω |
| | Z <15 Ω |
| Open: | Z >10 kΩ |
| **Measurement accuracy** | |
| with D‹0,1 or Q›10: | C: Ae = Af x Ad (1 + Cx/Cmax + Cmin/Cx) |
| (Ad = 1 if D<0,1) | L: Ae = Af x Ad (1 + Lx/Lmax + Lmin/Lx) |
| | Z: Ae = Af (1 + Zx/Zmax + Zmin/Zx) |
| | R: Ae = Af x Ad (1 + Rx/Rmax + Rmin/Rx) |
| with D ≥0,1: | $Ae = \sqrt{1 + Dx2}$ |
| with the parameters: | Cx, Lx, Zx, Rx = measurement value |
| Af = 0,2% | at f = 100 Hz, 120 Hz, 1 kHz |
| Af = 0,3% | at f = 10 kHz |
| Af = 0,5% | at f = 25 kHz |
| **Parameter** | **Auto Range** |
| Cmax | 160 µF/f (f in kHz) |
| Cmin | 53 pF/f (f in kHz) |
| Lmax | 480 H/f (f in kHz) |
| Lmin | 0,16 mH/f (f in kHz) |
| Zmax, Rmax | 3 MΩ |
| Zmin, Rmin | 0,5 Ω |
| Dissipation factor accuracy: | $D_e = \pm \frac{A_e}{100}$ |
| Quality factor accuracy: | $Q_e = \frac{Q_x^2 \cdot D_e}{1 \pm Q_x \cdot D_e}$ |
| Phase angle accuracy: | $\Theta = \frac{180}{\pi} \cdot \frac{A_e}{100}$ |

| Display | |
|---|---|
| 5-digits 7 segment LEDs with sign | |
| Display parameters:<br>Value<br>% value<br>Offset<br>rel. Offset | Calculation from measurement value and reference value stored |
| **Miscellaneous** | |
| The inputs are short-circuit-proof and overvoltage protected up to 100 VDC with a maximum energy consumption of 1J. | |
| One configuration can be stored. | |
| Operating temperature: | +5°C ... +40°C |
| Storage temperature | –20°C ... +70°C |
| Max. relative humidity: | 5%... 80% (without condensation) |
| Supply voltages (from HM8001-2): | +5 V/300 mA |
| | +5,2 V/50 mA |
| | -5,2 V/50 mA |
| | (∑ = 2 W) |
| Dimensions (without connector) W x H x D: | 135 x 68 x 228 mm |
| Weight: | approx. 500 g |

**Included in delivery:**
LCR Meter HM8018, Operating manual

**Optional accessories:**

HZ10S 5 x silicone test lead (measurement connection in black)
HZ10R 5 x silicone test lead (measurement connection in red)
HZ10B 5 x silicone test lead (measurement connection in blue)
HZ17 Kelvin test lead (4wire) with probe tips
HZ18 Kelvin test lead (4wire) with gold plated contacts
HZ19 Kelvin test lead (4wire) with SMD-Test-tweezers

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