

## Electronic Pressure Controller and Calibrator Model LR-Cal LCC 100

- generates and measures pressure and vacuum
- pressure up to 1 mbar, 10 mbar, 100 mbar, 1000 mbar and 2000 mbar (vacuum max. -600 mbar)
- Uncertainty up to  $\pm 0.1\%$  FS ( $\pm 1$  digit)
- Great adjustment accuracy (0.01% FS)
- Chargeable Li-Ion battery
- Generates pressure by pressing a key



The **LR-Cal LCC 100** measures and generates pressure and vacuum and consequently it is more than a mere measuring instrument - it can also be applied as test and calibration instrument for pressure sensors, pressure switches and pressure gauges. Thanks to internal pressure/vacuum generation no auxiliary tools are required for operation. An internal Li-Ion battery (chargeable) makes mobile operation very easy. Parallel operation of mains and battery supply allows for maximum flexibility.

### Typical applications:

- Mobile and stationary pressure standard for low pressure and vacuum
- Mobile and stationary of all kind of pressure reading instruments
- Mobile and stationary pressure and vacuum source for calibration purposes
- Leak test

### Technical Data:

| Type  | LCC 100-1   | LCC 100-10 | LCC 100-100   | LCC 100-1000 | LCC 100-2000 |
|---|---|------------|---|--------------|--------------|
| Order-Code:   | LCC-100-1   | LCC-100-10 | LCC-100-100   | LCC-100-1000 | LCC-100-2000 |
| Pressure range:                                       | 1 mbar  | 10 mbar    | 100 mbar  | 1000 mbar    | 2000 mbar    |
| Overpressure:   | 5-fold  | 5-fold     | 5-fold  | 2-fold       | 2-fold       |
| Uncertainty: ±1 digit                                 | ±0.3% FS  | ±0.1% FS   | The integrated electr. pump can make max. -600 mbar vacuum. If a larger vacuum is required, an external vacuum source is needed, e.g. calibration handpump model <b>LR-Cal LPP 08</b> . |              |              |
| Linearity: ±1 digit                                   | ±0.2% FS  | ±0.1% FS   |   |              |              |
| Hysteresis:   | max. 0,1% v.E.  |            |   |              |              |
| Measurement principle:                                | inductive   |            |   |              |              |
| Temperature drift of the internal reference sensor:   | Zero point: 0.003% FS / K (0% via zero balance)<br>Span: 0.03% FS / K   |            |   |              |              |
| ZERO balance:   | <ul style="list-style-type: none"><li>• automatic (in settable time spans, possible to switch off), or</li><li>• manual (by pressing the ZERO button)</li></ul>   |            |   |              |              |
| Long-term stability of the internal reference sensor: | 0.1% FS per year (typical)  |            |   |              |              |
| Temperature range:                                    | Working: +10°C...+40°C; Storage: -10°C...+70°C  |            |   |              |              |
| Usable pressure measuring range:                      | -10...+110%   |            |   |              |              |
| Adjustment accuracy:                                  | 0.01% FS  |            |   |              |              |
| Adjustment time:                                      | depending on volume <5 sec.   |            |   |              |              |
| Measurement media:                                    | Air, non-aggressive and corrosion-free dry gases  |            |   |              |              |
| Operation modes:                                      | <ul style="list-style-type: none"><li>• CTRL controlling pressure</li><li>• MESS measuring pressure</li><li>• AUTO individually definable pressure profile</li><li>• Remote-controlled operation (via USB or RS232 interface)</li></ul> |            |   |              |              |
| Display:  | Graphic display (white on blue background)  |            |   |              |              |
| Interfaces:   | USB and RS232   |            |   |              |              |
| Supply:   | 24 VDC / 1 A, build-in Li-Ion battery (8h typical) and mains charger 90...264 VAC   |            |   |              |              |
| Pressure ports:                                       | 6,6 x 11 mm (for flexible hose with 6 mm diameter)  |            |   |              |              |
| Dimension:  | Height 102.6 x Width 257 x Dept 271 mm (without handle)   |            |   |              |              |

Please note: The usable pressure range of the **LR-Cal LCC 100** types is -10%...+110% of the pressure range, depending on type. To achieve larger vacuum values, user can change the +/- pressure port connections.

### Operation modes of the LR-Cal LCC 100

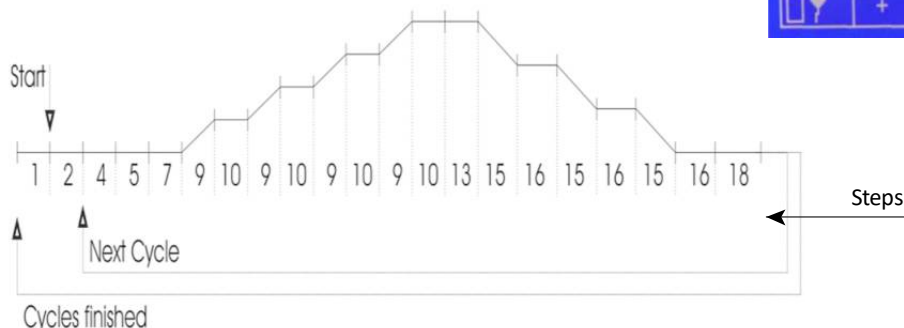
- **Measure:** The measuring mode ("MESS") is used to measure a gauge or differential pressure. In this operation mode the internal pump of the LR-Cal LCC 100 is deactivated. The applied pressure, measured by the internal reference sensor, is shown in the display.



- **Control:** The control mode ("CTRL") is used to calibrate pressure transmitter, pressure switches or pressure gauges. In this operation mode the internal pump of the LR-Cal LCC 100 is activated, the pressure is adjusted to the set point. The pressure value is shown in the display.

- **Auto:** In the "AUTO" mode, a calibration procedure can be defined. This mode allows a comfortable calibration of several test specimen with same specifications. The calibration can be run AUTOMATICALLY in this mode.

Following graphic shows the principle of a calibration procedure:



- Steps:
- |      |  |     |                          |
|------|--|-----|--------------------------|
| [1]  | Wait for start command (pressing OK key) | [2] | Delay time (adjustable)  |
| [4]  | Duration of ZERO balancing of the system | [7] | Dwell time at ZERO point |
| [9]  | Adjustment time to the next step         |     |                          |
| [10] | Dwell time                               |     |                          |
| [13] | Delay time at max. pressure step         |     |                          |
| [15] | Adjustment time to the next step         |     |                          |
| [16] | Dwell time at ZERO point                 |     |                          |
| [18] | Delay time (adjustable)                  |     |                          |



- **Leaktest:** In the CTRL mode, connected test specimen can be tested to leakage / tightness by pressing the LEAK key.

### Back view of the LR-Cal LCC 100



### Front panel of the LR-Cal LCC 100



### Optional Accessories:

Spare part: Mains supply 90...264 VAC (47...63 Hz)

Order-Code: **LCC-100-NT** (1 pc. included in standard supply of instrument)

Certificate of calibration (10 points)

Order-Code: **LCC-100-KAL-10**

Certificate of calibration (20 points)

Order-Code: **LCC-100-KAL-20**

Carrying case with custom foams:

Order-Code: **LCC-100-KOFFER**

