

LR-Cal LPC 300

- Up to 10 interchangeable reference pressure sensors, this means up to 10 different pressure ranges with just one device.
- Pressure ranges from 0...250 mbar (0...4 psi) to 0...8000 bar (0...116000 psi). Unique number of pressure ranges available. Pressure, vacuum, compound and absolute pressure ranges. Accuracy (up to 1000 bar): $\pm 0.025\%$ FS.
- Including certificate of calibration for pressure, current and voltage. Optional: DAkKS (DKD) certificate
- Measurement of current (0/4...20 mA) and voltage (0...10 V).
- Sourcing voltage (to power unit under test, 24 VDC).
- Mode MEASURE: fast and very accurate pressure measurement
- Mode CALIBRATE: pre-define calibration procedures and work with them in the field. Afterwards download calibration data to PC with optional PC-software for creating certificates, etc.
- Mode SWITCH-TEST: shows switching points and calculates hysteresis.
- Complete calibration kits **LR-Cal LPP-KIT** available, incl. portable pressure test pumps, adapters, etc.. See **LR-Cal LPP-KIT**.



LR-Cal LPC 300 for calibration service companies, service industry, maintenance facilities, measurement and control laboratories, quality assurance. Portable in the field or on bench in laboratory/workshop.

For a solution that always matches your application, there are many different pressure reference sensors **LR-Cal LPC-S** to choose from, with accuracies up to 0.025% and measuring ranges up to 8000 bar (116000 psi), which can be interchanged quickly and without tools. If the reference pressure sensor on the instrument is changed, then the digital indicator will recognise the new measuring range and so this saves the operator from having to configure it via menu. In addition to being fixed to the instrument, the reference pressure sensor can, optionally, be used externally via an approx. 1.2 m (4 ft.) long connecting cable.

In the setup menu, there are 3 operating modes to choose from. A menu assistant supports the user during each operation and records, for example, the calibration data from several calibrations or automatically calculates the switch hysteresis. To power the test item and to read its measurement signals, there are electrical inputs and outputs which are protected from adverse conditions in the field by optional protection caps.

For the evaluation and documentation of the calibration data stored in the **LR-Cal LPC 300** the software **LR-Cal LPC-Cal** is available. Using this software, the data is automatically transferred into a printable calibration certificate. For data transfer, a USB and RS232 interface are available at the **LR-Cal LPC 300**.

For mobile maintenance and service applications, various service case kits **LR-Cal LPP-KIT** are available. These include service cases with or without pressure generation, charger, test-cable set, adapters, etc.

A mains charger 115...230 VAC with EU-/UK-/US-adapters and a test-cable set are included in standard delivery.



Image:
Electrical ports at the **LR-Cal LPC 300**

Image (left):
LR-Cal LPC 300 with 4 reference sensors **LR-Cal LPC-S** in optional transit case.

LPC 300 Documenting process and pressure calibrator with up to 10 measuring ranges, $\pm 0.025\%$ FS

LR-Cal



Reference pressure sensors LR-Cal LPC-S for LR-Cal LPC 300

Min. 1 sensor, max. 10 sensoren with one LR-Cal LPC 300 instrument. Direct connected or externally via optional extension cable 1.2 m (Order-Code: LPC-KABEL)

Pressure range	[bar]	0...0.25	0...0.4	0...0.6	0...1	0...1.6	0...2.5	0...4	0...6	0...10	0...16
Overpressure limit	[bar]	1.6	2	4	5	10	10	14	35	35	80
Burst pressure	[bar]	2.4	2.4	4.8	6	12	12	20.5	40	42	96
Accuracy of measuring chain: $\pm 0.025\%$ FS (calibrated at 23°C (74°F) and in vertical mounting position, pressure connection facing downwards)											
Pressure range	[bar]	0...25	0...40	0...60	0...100	0...160	0...250	0...400	0...600	0...700	0...1000
Overpressure limit	[bar]	80	80	120	200	320	500	800	1200	1200	1500
Burst pressure	[bar]	96	96	550	800	1000	1200	1700	2400	2400	3000
Accuracy of measuring chain: $\pm 0.025\%$ FS (calibrated at 23°C (74°F) and in vertical mounting position, pressure connection facing downwards)											
Pressure range	[bar]	-0.4...0	-0.6...0	-1...0	-0.25...+0.25	-0.4...+0.4	-0.6...+0.6	-1...+1.5	-1...+3	-1...+5	-1...+9
Overpressure limit	[bar]	2	4	5	2	4	5	10	14	35	35
Burst pressure	[bar]	2.4	4.8	6	2.4	4.8	6	12	20,5	40	42
Accuracy of measuring chain: $\pm 0.025\%$ FS (calibrated at 23°C (74°F) and in vertical mounting position, pressure connection facing downwards)											
Pressure range	[bar]	-1...+10	-1...+15	-1...+20	-1...+24	-1...+39	All pressure ranges from 0...0.4 bar to 0...25 bar are also available as absolute pressure ranges.				
Overpressure limit	[bar]	35	80	80	80	80					
Burst pressure	[bar]	42	96	96	96	96					
Accuracy of measuring chain: $\pm 0.025\%$ FS (calibrated at 23°C (74°F) and in vertical mounting position, pressure connection facing downwards)											
Pressure range	[bar]	0...1600	0...2500	0...4000	0...5000	0...6000	0...7000	0...8000			
Overpressure limit	[bar]	2300	3500	5000	6000	7000	8000	10000			
Burst pressure	[bar]	4000	6000	8000	10000	11000	11000	12000			
Accuracy of measuring chain: $\pm 0.1\%$ FS; 0...7000 bar and 0...8000 bar $\pm 0.15\%$ FS (calibrated at 23°C (74°F) and in vertical mounting position, pressure connection facing downwards)											

Technical data LR-Cal LPC 300

Anzeige

Display	Large TFT colour screen for the display of reference and test signals and additional information
Display resolution	up to 6 digits, adjustable
Pressure units	mbar, bar, psi, Pa, hPa, Mpa, mmHg, cmHg, inHg, mmH2O, cmH2O, mH2O, inH2O, kg/cm ² and a customer-specific unit (freely selectable dependant on measuring range)

Funktionen

Operating modes	MEASURING, CALIBRATION and SWITCH-TEST
Measurement rate	2 values per second
Functions	MEASURING, CALIBRATION, SWITCH-TEST Min-/Max memory, Tare, Min-/Max alarm (audible/visual), filter (running average), zero-point adjustment, PowerSave function
Menu languages	German, English, Spanish, French, Italian (settable), or Russian

CALIBRATE function

Memory capacity	up to 16 test items
Test points / test item	up to 32 comparison points per test item

SWITCH-TEST function

Switch points	Determination of the switch points and automatic calculation of the hysteresis
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Measuring input: Voltage

Measuring ranges	0...1 VDC, 0...2 VDC, 0...5 VDC, 0...10 VDC
Resolution	up to 6 digits, adjustable
Accuracy	0.5 mV

Measuring input: Current

Measuring ranges	0...20 mA, 4...20 mA
Resolution	up to 6 digits, adjustable
Accuracy	1.6 μ A

Output

Voltage supply	24 VDC (load: max. 50 mA; min. 20 mA), can be activated via menu
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Power supply

Supply	Internal Lithium-Ion rechargeable battery (charging time < 6 h)
Battery life	approx. 20 hours of operation

Permissible ambient conditions

Operating temperature	0...50°C (32...122°F)
Storage temperature	-20...+70°C (-4...+158°F)
Relative humidity	0...85% r.h. (non-condensing)

Communication

Interfaces	USB and RS232
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Case

Material	Impact-resistant ABS plastic, membrane keypad, transparent screen
Ingress protection	IP 54 (with protection caps closed)
Dimensions	156 mm x 208 mm x 78 mm (incl. direct mounted reference sensor)
Weight	approx. 850 g (1.87 lbs) (without reference sensor)

DRUCK & TEMPERATUR Leitenberger GmbH • Bahnhofstr. 33 • D-72138 Kirchentellinsfurt • GERMANY

Tel. +49 (0) 7121-90920-0 • Fax +49 (0) 7121-90920-99 • DT-Info@Leitenberger.de • www.LR-Cal.net • www.druck-temperatur.de

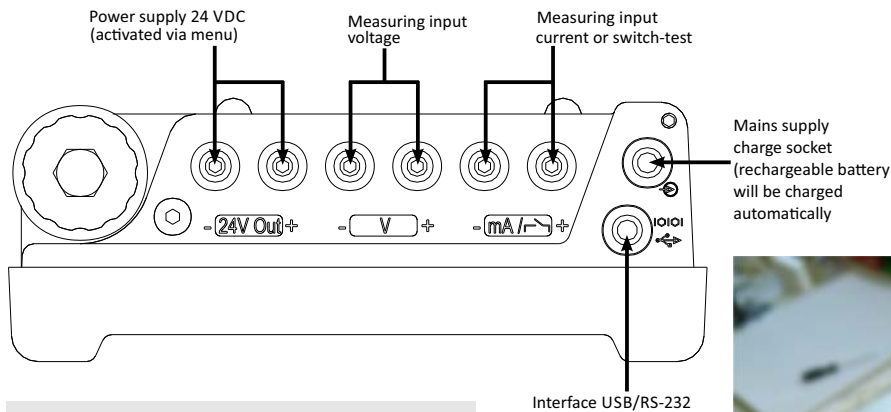
Technical data LR-Cal LPC-S sensor for LR-Cal LPC 300

Pressure connection	≤ 1000 bar: 1/2" BSP male (optional several threaded adapters available) ≥ 1600 bar: M16 x 1.5 female with sealing cone 60°
Material	
Wetted parts	Stainless steel (ranges ≥ 40 bar... ≤ 1000 bar: Elgiloy® in addition)
Internal transmission fluid	Only for measuring ranges up to 25 bar (360 psi): synthetic oil For optional oxygen variants: Halocarbon oil (max. +60°C / +140°F)
Sensor specifications	
Accuracy per year	$\leq 0.025\%$ FS (only with related LR-Cal LPC 300) Ranges ≥ 1600 bar: $\pm 0.1\%$ FS, ≥ 7000 bar: $\pm 0.15\%$ FS
Compensated range	0...50°C (32...122°F)
Permissible ambient conditions	
Medium temperature	-20...+80°C / -4...+176°F (optional oxygen variants: max. +60°C / +140°F)
Operating temperature	-20...+80°C / -4...+176°F
Storage temperature	-40...+85°C / -40...+185°F
Relative humidity	0...95% r.h. (non-condensing)
Case	
Material	Stainless steel
Connection to LR-Cal LPC 300	Plug and Play, direct (optional: externally via extension cable 1.2 m / 4 ft.)
Ingress protection	IP65 (with cable connected)
Dimensions	Height 126 mm x largest diameter 40 mm
Weight	approx. 230 g (0.5 lbs.)
Output signal	Digital communication to LR-Cal LPC 300

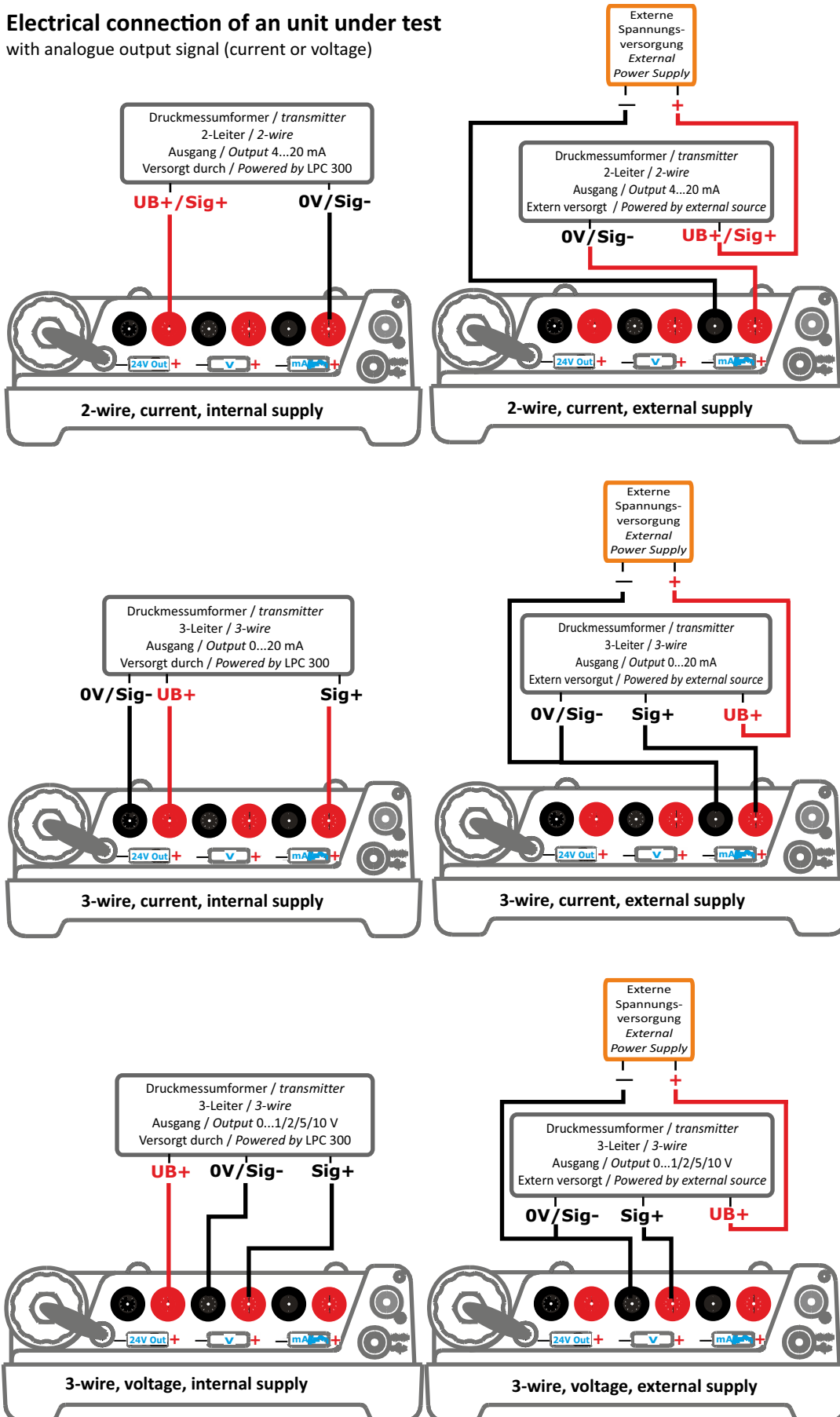
Conformities, approvals and certifications

- EMC directive 2004/108/EC, EN 61326 emission (group 1, class B) and interference immunity (LR-Cal LPC 300: portable measuring equipment and LR-Cal LPC-S: industrial application)
- Pressure equipment directive 97/23/EC, module A, PS > 200 bar, pressure accessory
- Traceable factory certificates of calibration for pressure, current and voltage
Optional: DAKKS (DKD) certification for pressure

Electrical connections at the instrument LR-Cal LPC 300

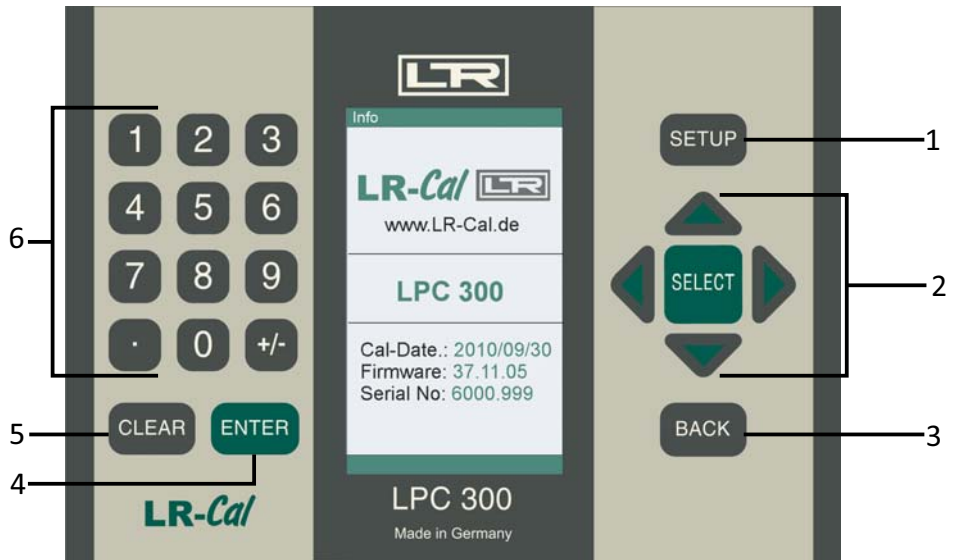


Electrical connection of an unit under test
with analogue output signal (current or voltage)



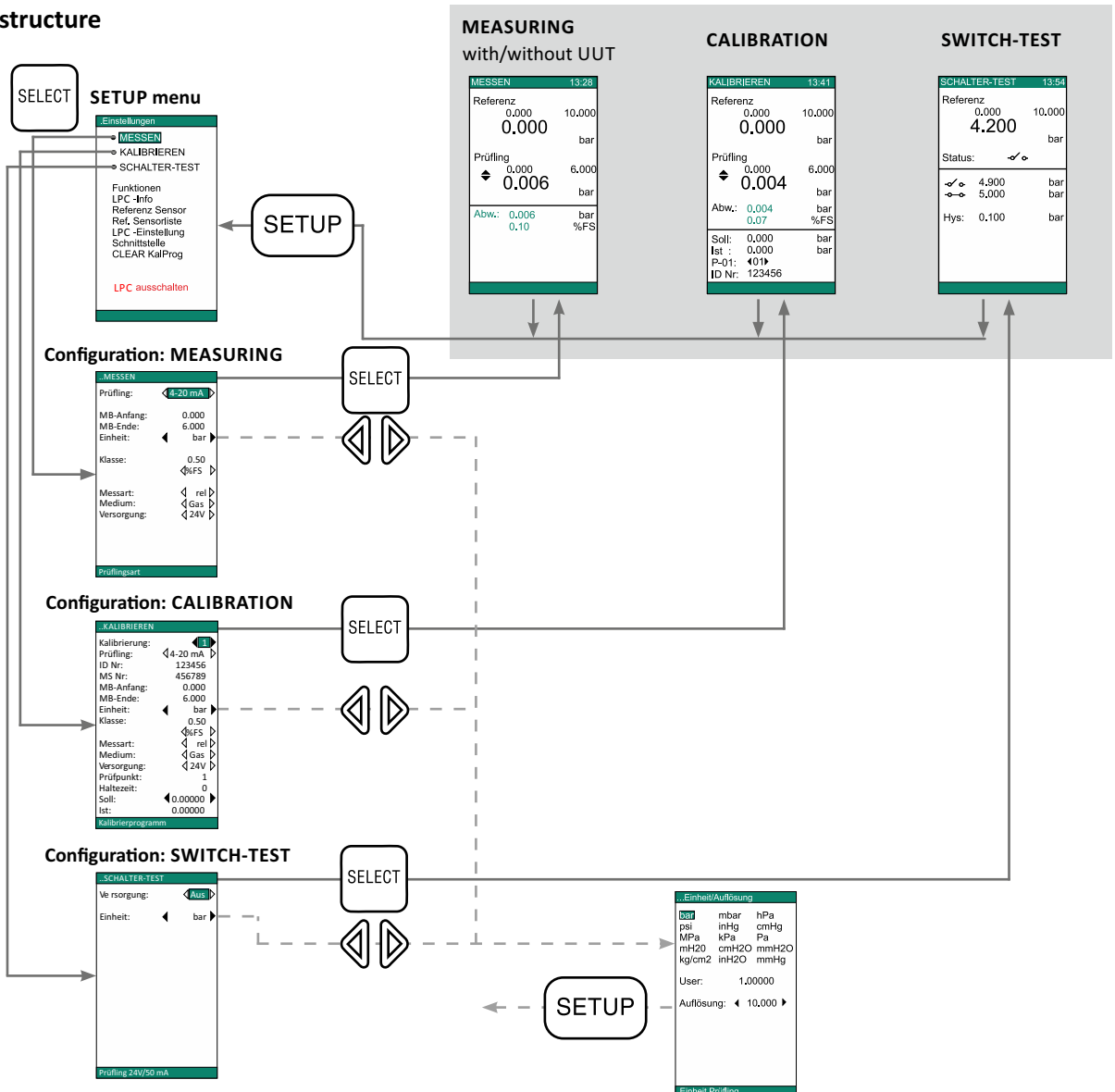
User interface

- 1 - Setup menu
 - 2 - Selection and entry confirmation
 - 3 - One step back
 - 4 - Clear entry
 - 5 - Entry acknowledgement
 - 6 - Numeric keypad
- Switch ON:
via pressing any button/key.
- Switch OFF:
via menu item in main menu



Operating modes

Menu structure



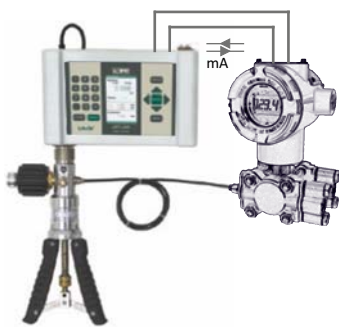
LPC 300 Documenting process and pressure calibrator with up to 10 measuring ranges, $\pm 0.025\%$ FS



Reference pressure sensor **LR-Cal LPC-S** mounted directly at the **LR-Cal LPC 300** instrument:



Reference pressure sensor **LR-Cal LPC-S** externally with optional extension cable connected to **LR-Cal LPC 300**

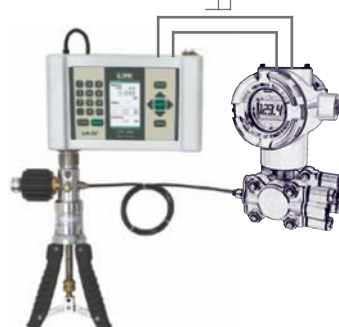


Mode: MEASURE

MESSEN	13:28
Referenz	0.000 10.000
	0.000 bar
Prüfung	0.000 6.000
	0.006 bar
Abw.:	0.006 bar
	0.10 %FS

Mode: CALIBRATE

KALIBRIEREN	13:41
Referenz	0.000 10.000
	0.000 bar
Prüfung	0.000 6.000
	0.004 bar
Abw.:	0.004 bar
	0.07 %FS
Soll:	0.000 bar
Ist :	0.000 bar
P-01:	401
ID Nr:	123456



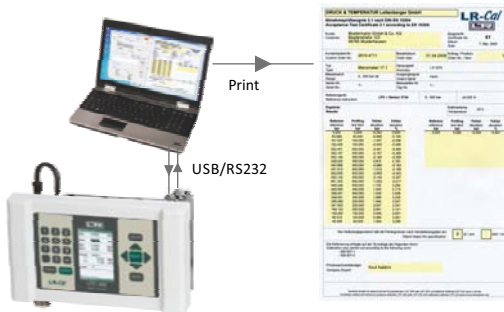
Mode: SWITCH-TEST

SCHALTER-TEST	13:54
Referenz	0.000 10.000
	4.200 bar
Status:	↔ ↔
↔ ↔	4.900 bar
↔ ↔	5.000 bar
Hys:	0.100 bar

The menu guides the user through the steps to configure and carry out calibrations and measurements. Different height levels between reference and unit under test can be specified and automatically corrected.

Comfortable checking and testing of pressure switches. Indication of switch points and automatically calculation of the hysteresis.

Optional PC software **LR-Cal LPC-Cal**



- Calibration of pressure transmitter, pressure gauges on site, without PC or laptop.
- A calibration assistant guides through the calibration, considering the DKD/DAkkS guidelines (e.g. dwell times, pre-charges, etc.) The data is stored including date & time in the instrument's memory. Calibration procedures can be pre-defined with the calibrator.
- With the **LR-Cal LPC-Cal** software the stored calibration data can be downloaded to PC/laptop and printed out as certificate.

Komplette Test-, Service- und Kalibrierkoffer

Transit and service case including pressure test pump(s), set(s) of threaded adapters and software. See datasheet **LR-Cal LPP-KIT** resp. brochure „Portable Pressure Calibration“.

