

Pressure Calibration Equipment - portable

To calibrate a pressure reading instrument (e.g. pressure gauge, transmitter, switch, ...) mainly two components are necessary: a pressure source (with fine adjustment facility) and a reference instrument (3 to 4 times more accurate than the test item). The test item and the reference instrument are pressurized with same pressure and by comparison of values of test item and reference instrument the accuracy of the test item can be defined or checked.

Main components of the LR-Cal Pressure Calibration Kit's LPP-KIT are:

- portable calibration test pumps **LPP 30** (pneumatic) or **LPP 700 / LPP 1000** (hydraulic) with fine adjustable volume variator and test hose (see datasheets "LPP 30", "LPP 700" and "LPP 1000" for details)
- Test hose (0.5 m at LPP 30, 1.0 m at LPP 700 / LPP 1000 calibration test pumps)



- Set of BSP threaded adapters (made in stainless steel, PN 1000 bar) to adapt test items with 1/8" BSP male, 1/4" BSP male, 3/8" BSP mal, 1/2" BSP male or 1/2" BSP female thread to the test port (hose) of the calibration pump



- Reference instrument (several different types available, with different accuracies. To be selected according to the accuracy of the test item (3-4 times better).



- Transit case (with custom foams)



The **combined "pneumatic & hydraulic" LR-Cal LPP-Kit's** are containing both, a pneumatic LPP 30 calibration pump and a hydraulic LPP 700 / LPP 1000 pump, each pump with suitable test hose and two reference instruments (or two reference sensors for calibrators LPC 200 / LPC 300).



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Overview:

LPP-Kit Type	Calibration Test Pump(s)	Reference Instrument	Accuracy % full scale	Available Ranges > see price list for details <
LPP-KIT-PA 	LPP 30	1 x LPP-MANO	$\pm 1.0\%$ f.s.	-1...0 bar to 0...40 bar (Price List Page 2.1-03.0)
LPP-KIT-HA 	LPP 700 / 1000	1 x LPP-MANO	$\pm 1.0\%$ f.s.	0...60 bar to 0...1000 bar (Price List Page 2.1-03.0)
LPP-KIT-PH-A (combined KIT)	LPP 30 + LPP 700 / 1000	2 x LPP-MANO	$\pm 1.0\%$ f.s.	-1...0 bar to 0...1000 bar (Price List Page 2.1-03.0)
LPP-KIT-PD-50 	LPP 30	1 x LDM 70-K50	$\pm 0.5\%$ f.s.	0...1.6 bar to 0...40 bar (Price List Page 2.1-03.1)
LPP-KIT-HD-50 	LPP 700 / 1000	1 x LDM 70-K50	$\pm 0.5\%$ f.s.	0...60 bar to 0...400 bar (Price List Page 2.1-03.1)
LPP-KIT-PH-D-50 (combined KIT)	LPP 30 + LPP 700 / 1000	2 x LDM 70-K50	$\pm 0.5\%$ f.s.	0...1.6 bar to 0...1000 bar (Price List Page 2.1-03.1)



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LPP-Kit Type	Calibration Test Pump(s)	Reference Instrument	Accuracy % full scale	Available Ranges > see price list for details <
LPP-KIT-PD-20 	LPP 30	1 x TLDMM-A02	±0.2% f.s.	-1...+1 bar to 0...20 bar (Price List Page 2.1-03.2)
LPP-KIT-HD-20 	LPP 700 / 1000	1 x TLDMM-A02	±0.2% f.s.	0...50 bar to 0...1000 bar (Price List Page 2.1-03.2)
LPP-KIT-PH-D-20 (combined KIT)	LPP 30 + LPP 700 / 1000	2 x TLDMM-A02	±0.2% f.s.	-1...+1 bar to 0...1000 bar (Price List Page 2.1-03.2)
LPP-KIT-PD-10 	LPP 30	1 x TLDMM-A01	±0.1% f.s.	-1...+1 bar to 0...20 bar (Price List Page 2.1-03.3)
LPP-KIT-HD-10 	LPP 700 / 1000	1 x TLDMM-A01	±0.1% f.s.	0...50 bar to 0...1000 bar (Price List Page 2.1-03.3)
LPP-KIT PH-D-10 (combined KIT)	LPP 30 + LPP 700 / 1000	2 x TLDMM-A01	±0.1% f.s.	-1...+1 bar to 0...1000 bar (Price List Page 2.1-03.3)



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LPP-Kit Type	Calibration Test Pump(s)	Reference Instrument	Accuracy % full scale	Available Ranges > see price list for details <
LPP-KIT-PD-05 	LPP 30	1 x TLDMM	$\pm 0.05\%$ f.s.	-1...+1 bar to 0...20 bar (Price List Page 2.1-03.4)
LPP-KIT-HD-05 	LPP 700 / 1000	1 x TLDMM	$\pm 0.05\%$ f.s.	0...50 bar to 0...1000 bar (Price List Page 2.1-03.4)
LPP-KIT-PH-D-05 (combined KIT)	LPP 30 + LPP 700 / 1000	2 x TLDMM	$\pm 0.05\%$ f.s.	-1...+1 bar to 0...1000 bar (Price List Page 2.1-03.4)
LPP-KIT-PK-LPC200 	LPP 30	Pressure Calibrator LPC 200 + 1 x LPC-2	$\pm 0.025\%$ f.s.	-1...0 bar to 0...40 bar (Price List Page 2.1-03.5)
LPP-KIT-HK-LPC200 	LPP 700 / 1000	Pressure Calibrator LPC 200 + 1 x LPC-2	$\pm 0.025\%$ f.s.	0...100 bar to 0...1000 bar (Price List Page 2.1-03.5)
LPP-KIT-PH-LPC200 (combined KIT)	LPP 30 + LPP 700 / 1000	Pressure Calibrator LPC 200 + 2 x LPC-2	$\pm 0.025\%$ f.s.	-1...0 bar to 0...1000 bar (Price List Page 2.1-03.5)





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LPP-Kit Type	Calibration Test Pump(s)	Reference Instrument	Accuracy % full scale	Available Ranges > see price list for details <
LPP-KIT-PK-LPC300 	LPP 30	Process Calibrator LPC 300 + 1 x LPC-S	$\pm 0.025\%$ f.s.	-1...0 bar to 0...40 bar (Price List Page 2.1-03.6)
LPP-KIT-HK-LPC300 	LPP 700 / 1000	Process Calibrator LPC 300 + 1 x LPC-S	$\pm 0.025\%$ f.s.	0...60 bar to 0...1000 bar (Price List Page 2.1-03.6)
LPP-KIT-PH-LPC300 (combined KIT)	LPP 30 + LPP 700 / 1000	Process Calibrator LPC 300 + 2 x LPC-S	$\pm 0.025\%$ f.s.	-1...0 bar to 0...1000 bar (Price List Page 2.1-03.8)

Electronic Process Calibrator LPC 300

- Very simple operation, easily-read display (backlighting selectable)
- Changeable reference sensors LPC-S (plug & play), this means, up to 10 pressure ranges with one instrument (also vacuum, compound, absolute ranges...)
- Accuracy $\pm 0.025\%$ of full scale value
- Reading of pressure, voltage and current
- Conversion voltage/current to pressure
- Storage of calibration data, possibility to pre-define calibration procedures, download calibration data to PC with included **LPC-Cal** software, printing of Certificates of Calibration with PC. Incl. USB-cable, optional RS232.
- Simultaneous display of reference pressure, output of unit under test (mA / V or pressure value entered by user via numeric keypad), deviation in selected pressure unit and deviation in % of full scale or of reading of test specimen.



On the next pages you find the related datasheets of the LPP-KIT's components...



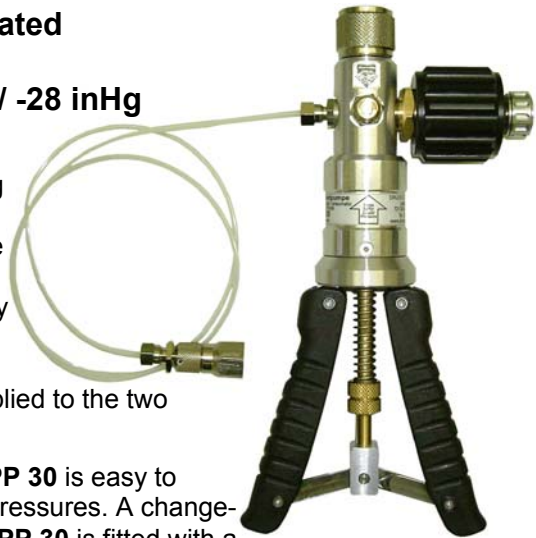
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Calibration Test Pump LPP 30, pneumatic operated to generate pressure up to +35 bar / +500 PSI switchable to generate vacuum up to -0.95 bar / -28 inHg

The Calibration Test Pump **LPP 30** is used to generate pressures and vacuum for checking, adjusting and calibrating mechanical and electronic pressure measuring instruments by comparative measurements. These pressure tests may be carried out in laboratories, workshop or on site at the measuring point. If the instrument under test and a sufficiently accurate reference measuring instrument (e.g. Electronic Pressure Calibrator LPC 300 or LPC 200, $\pm 0.025\%$ FS) are connected to the **LPP 30**, the same pressure / vacuum is applied to the two instruments when the pump is operated.



Despite its compact dimensions, the calibration test pump **LPP 30** is easy to operate and allows for exact generation of the required test pressures. A change-over switch enables the generation of vacuum as well. The **LPP 30** is fitted with a fine adjustment valve for the precise adjustment of pressures. The reference instrument is screwed directly on to the top of the pump and the unit under test is connected by means of a connection tube incorporating an adapter 1/4" BSP rotating female (or 1/4" NPT female) port.

Specification:

Pressure generation:	0...35 bar = 0...500 PSI (or equivalent), switchable to
Vacuum generation:	0...-0.95 bar = 0...-28 inHG (or equivalent)
Pressure ports:	1/2" BSP female rotating (with seal) for reference instrument on the top of the pump (Type LPP-30-N14: 1/4" NPT female, type LPP-30-G14: 1/4" BSP female rotating) 1/4" BSP female for unit under test (at connection tube) (Type LPP-30-N14: 1/4" NPT female)
Volume per stroke:	appr. 11 cm ³
Materials:	anodized aluminum, brass, ABS
Fine adjustment:	Fine adjustment valve
Dimension:	appr. 220 x 105 x 63 mm
Weight:	appr. 510 g

Included in standard supply:

- Calibration test pump **LPP 30**
- Connection tube with 1/4" BSP female rotating port
- Operating manual

Optional accessories:

- Set of adapters and seals for unit under test
- Rigid plastic case with foams



Recommended Reference Instruments:

• Accuracy $\pm 0.025\%$ FS:	Electronic Process Calibrator	LPC 300	(see sep. datasheet)
• Accuracy up to $\pm 0.025\%$ FS:	Electronic Pressure Calibrator	LPC 200	(see sep. datasheet)
• Accuracy $\pm 0.050\%$ FS:	Electronic Pressure Calibrator	TLDMM	(see sep. datasheet)
• Accuracy $\pm 0.1\%$ FS:	Digital Test Pressure Gauge	TLDMM-A01	(see sep. datasheet)
• Accuracy $\pm 0.2\%$ FS:	Digital Test Pressure Gauge	TLDMM-A02	(see sep. datasheet)
• Accuracy $\pm 0.25\%$ FS:	Digital Test Pressure Gauge	LDM70-E25	(see sep. datasheet)
• Accuracy $\pm 0.5\%$ FS:	Digital Test Pressure Gauge	LDM70-K50	(see sep. datasheet)
• Accuracy $\pm 1.0\%$ FS:	Analogue Pressure Gauge	LPP-MANO	(see back page)



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Order-Codes:

Description	Order Code
LPP 30 Calibration Test Pump -0,95...+35 bar (-28 in Hg...+500 psi) NOTE: if you dismount the reference connector, you get 3/8" BSP female port	LPP- 30
ditto, but reference port 1/4" BSP female rotating	LPP- 30- G14
ditto, but reference port and test port 1/4" NPT female	LPP- 30- N14
Set of BSP adapters and set of seals 1/8" BSP, 3/8" BSP and 1/2" BSP	LPP- ADAPTER- BSP
Set of metric adapters and set of seals M12x1,5 M20x1,5 and Minimess®	LPP- ADAPTER- M
Set of NPT adapters 1/8" NPT, 1/4" NPT, 3/8" NPT, 1/2" NPT	LPP- ADAPTER- NPT
Carrying case with foams	LPP- KOFFER
LPP-MANO analogue reference gauge DS 63 ±1% FS, 0 ... 2 bar and 0 ... 30 PSI - fine graduation	LPP- MANO- 0002
ditto, but range 0 ... 11 bar and 0 ... 160 psi	LPP- MANO- 0011
ditto, but range 0 ... 25 bar and 0 ... 365 psi	LPP- MANO- 0025
ditto, but range 0 ... 40 bar and 0 ... 600 psi	LPP- MANO- 0040
ditto, but range -1 ... 0 bar and -30 ... 0 inHg	LPP- MANO- 0000
ditto, but range -1...+39 bar and -30 in Hg ... +580 psi	
Spare part: Test tube with 1/4" BSP female port	LPP- SCHLAUCH
Spare part: Fine adjustment valve with relief valve	LPP- VENTIL
Service Kit for LPP 30 (O-rings, seals, etc.)	LPP- WARTUNG



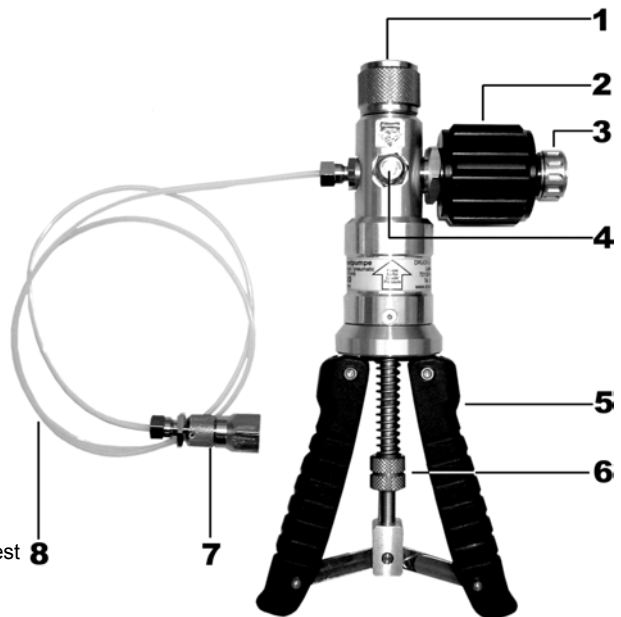
NOTES:

To mount the reference instruments

- **LPC 300 - LPC 200 - TLDMM - TLDMM-A01 - TLDMM-A02 - TDMC - LPP-MANO**
you do **not** need any adapter if you use the calibration handpump type LPP-30.



- (1) pressure port 1/2" BSP female rotating for reference
(1/4" NPT female at type LPP-30-N14)
(1/4" BSP female rotating at type LPP-30-G14)
- (2) fine adjustment valve
- (3) pressure/vacuum relief valve
- (4) change-over switch for pressure/vacuum generation
- (5) handles
- (6) adjustable knurled nut for adjustment of delivery rate
- (7) pressure port 1/4" BSP female rotating for unit under test
(1/4" NPT female at type LPP-30-N14)
- (8) test tube



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Calibration Test Pump LPP 700

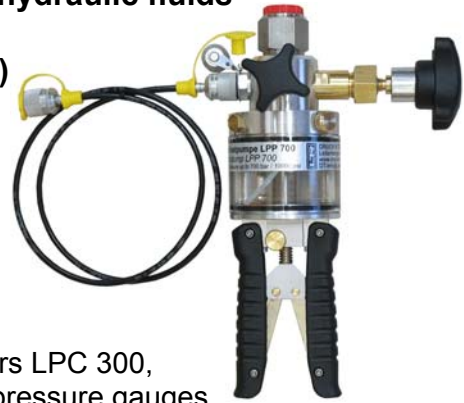
- hydraulic operated (suitable for mineral oil based hydraulic fluids or clean water, free of calcium-carbonate / scale)
- generating test pressure up to 10 000 PSI (700 bar)
- test hose MINIMESS® included

The portable Calibration Test Pump **LPP 700** has been designed for easy to use pressure calibration equipment "in the field", for testing pressure gauges, pressure switches and pressure transmitters. 10 000 PSI (700 bar) can be reached in a simple way, using the "prime/high pressure" selector.

Reference instruments such as electronic pressure calibrators LPC 300, LPC 200 and TLDMM as well as precision digital reference pressure gauges as TLDMM-A01, TLDMM-A02 and LDM 70 can be mounted directly on the top of the **LPP 700**.

High quality construction, no leakage.

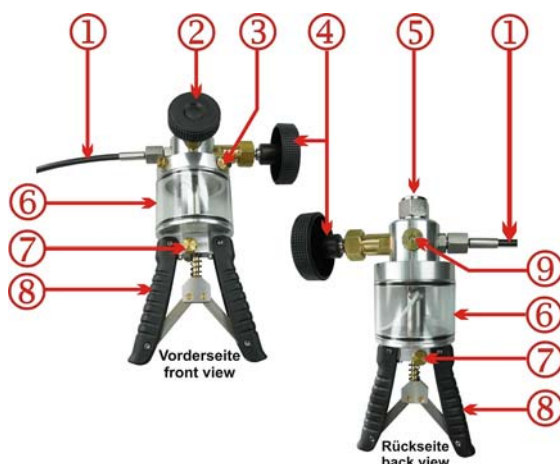
The Calibration Test Pump **LPP 700** is supplied including a test hose (MINIMESS® 1620), length 1 m, with 1/4" BSP F port.



Specification:

Pressure ports:	for reference instrument: 1/2" BSP female, rotating, at the top of the pump. After dismounting of the 1/2" BSP swivel, you have a 3/8" BSP female thread, suitable for a lot of special reference instruments for test item: MINIMESS® hose (length 1 m), with coupling to 1/4" BSP female thread
Liquid reservoir:	200 cm ³ (re-filling during pressure generation possible)
Construction:	High quality, no leakage, robust, portable, easy to handle
Pressure adjustment:	Pressure fine control and pressure release valve.
Dimensions / weight:	appr. 270 x 160 x 120 mm (without hose) / appr. 1.3 kg (without hose)

Control elements LPP 700:



- (1) = flexible hose MINIMESS® 1620
- (2) = Pressure release valve, fine adjustable
- (3) = Liquid reservoir filling plug
- (4) = Fine control (volume adjustment)
- (5) = 1/2" BSP female rotating reference port
- (6) = Liquid reservoir
- (7) = Priming / high pressure switching knob
- (8) = Pump handles
- (9) = Blind plug, never open!



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Available Types:

Type	Generating pressure up to	Order-Code
LPP 700	10 000 PSI (700 bar), suitable for mineral oil based hydraulic fluids or clean water, free of calcium-carbonate / scale. Not suitable for distilled water or water based hydraulic fluids.	LPP-700

Accessories:

Type	Description	Order-Code
Case	Plastic case with foams, for LPP 700, hose, adapters and reference instrument	LPP-H-KOFFER
Adapter BSP	st.st. Adapter set (BSP) incl. spare O-rings, for test specimen port: 1/8" BSP, 3/8" BSP, 1/2" BSP M & F	LPP-ADAPTER-BSP
Adapter NPT	st.st. Adapter set (NPT), for test specimen port: 1/8" NPT, 1/4" NPT, 3/8" NPT, 1/2" NPT	LPP-ADAPTER-NPT
Adapter metric	st.st. Adapter set (metric) incl. spare O-rings, for test specimen port: M 12 x 1.5 and M 20 x 1.5	LPP-ADAPTER-M
Service	Service kit (seals, gaskets, ...) for LPP 700	LPP-H-WARTUNG
Fluid	Special operating oil for LPP 700 (1 l bottle)	CPB5000-FLUID
Analogue referenz-pressure gauge LPP-MANO 	Analogue reference pressure gauge DS 100 mm (4") Dial with fine graduation, knife pointer, pressure port 1/2" BSP male, range 0 - 60 bar / 0 - 800 PSI Accuracy $\pm 0.6\%$ f.s.	LPP-MANO-0060
	Ditto, 0 - 100 bar / 0 - 1400 PSI, accuracy $\pm 0.6\%$ f.s.	LPP-MANO-0100
	Ditto, 0 - 160 bar / 0 - 2000 PSI, accuracy $\pm 0.6\%$ f.s.	LPP-MANO-0160
	Ditto, 0 - 250 bar / 0 - 3000 PSI, accuracy $\pm 0.6\%$ f.s.	LPP-MANO-0250
	Ditto, 0 - 400 bar / 0 - 5000 PSI, accuracy $\pm 0.6\%$ f.s.	LPP-MANO-0400
	Ditto, 0 - 600 bar / 0 - 8000 PSI, accuracy $\pm 1.0\%$ f.s.	LPP-MANO-0600
	Ditto, 0 - 1000 bar / 0 - 14500 PSI, accuracy $\pm 1.0\%$ f.s.	LPP-MANO-1000
MINIMESS hose in other lengths	MINIMESS® 1620 hose, length 2.0 m	MMS-M16X2-2-0
	MINIMESS® 1620 hose, length 3.2 m	MMS-M16X2-3-2
	MINIMESS® 1620 hose, length 4.0 m	MMS-M16X2-4-0

Recommended precision reference pressure instruments:

	Accuracy:
• Electronic process calibrator LPC 300	$\pm 0.025\%$ f.s.
• Electronic pressure calibrator LPC 200	$\pm 0.025\%$ f.s. / $\pm 0.1\%$ m.v.
• Electronic pressure calibrator TLDMM	$\pm 0.05\%$ f.s.
• Digital precision reference pressure gauge TLDMM-A01	$\pm 0.1\%$ f.s.
• Digital precision reference pressure gauge TLDMM-A02	$\pm 0.2\%$ f.s.
• Digital test pressure gauge LDM 70-E25	$\pm 0.25\%$ f.s.
• Digital test pressure gauge LDM 70-K50	$\pm 0.5\%$ f.s.



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Calibration Test Pump LPP 1000

- hydraulic operated (suitable for mineral oil based hydraulic fluids or clean water, free of calcium-carbonate / scale)
- generating test pressure up to 14 500 PSI (1000 bar)
- flexible high pressure test hose included

The portable Calibration Test Pump **LPP 1000** has been designed for easy to use pressure calibration equipment "in the field", for testing pressure gauges, pressure switches and pressure transmitters. 14 500 PSI (1000 bar) can be reached in a simple way, using the "prime/high pressure" selector. Reference instruments as electronic pressure calibrators LPC 300, LPC 200 and TLDMM as well as precision digital reference pressure gauges as TLDMM-A01, TLDMM-A02 and LDM 70 can be mounted directly on the top of the **LPP 1000**. High quality construction, no leakage.

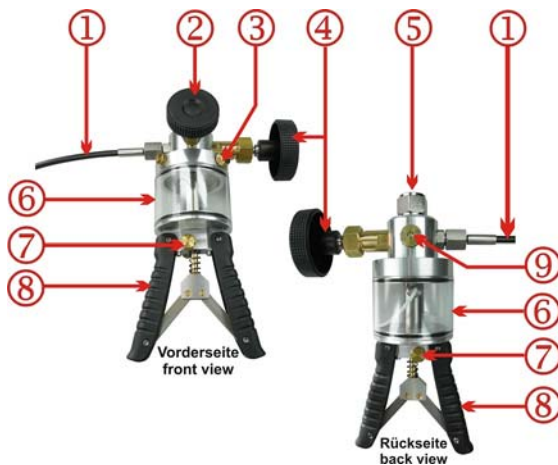


The Calibration Test Pump **LPP 1000** is supplied including a flexible high pressure test hose, length 1 m, with 1/4" BSP F port.

Specification:

Pressure ports:	for reference instrument: 1/2" BSP female, rotating, at the top of the pump. After dismounting of the 1/2" BSP swivel, you have a 3/8" BSP female thread, suitable for a lot of special reference instruments for test item: flexible high pressure test hose (length 1 m), with coupling to 1/4" BSP female thread
Liquid reservoir:	200 cm ³ (re-filling during pressure generation possible)
Construction:	High quality, no leakage, robust, portable, easy to handle
Pressure adjustment:	Pressure fine control and pressure release valve.
Dimensions / weight:	appr. 270 x 160 x 120 mm (without hose) / appr. 1.3 kg (without hose)
Option:	special version LPP-1000-S, suitable for brake fluid / SKYDROL.

Control elements LPP 1000:



- (1) = flexible high pressure test hose PN 14500 PSI
- (2) = Pressure release valve, fine adjustable
- (3) = Liquid reservoir filling plug
- (4) = Fine control (volume adjustment)
- (5) = 1/2" BSP female rotating reference port
- (6) = Liquid reservoir
- (7) = Priming / high pressure switching knob
- (8) = Pump handles
- (9) = (Blind plug, never open!)



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Available Types:

Type	Generating pressure up to	Order-Code
LPP 1000	14 500 PSI (1000 bar), suitable for mineral oil based hydraulic fluids or clean water, free of calcium-carbonate / scale. NOT suitable for distilled water or water based hydraulic fluids.	LPP-1000
LPP 1000-S	14 500 PSI (1000 bar), suitable for SKYDROL and other brake fluids NOT suitable for hydraulic oil	LPP-1000-S

Accessories:

Type	Description	Order-Code
Case	Plastic case with foams, for LPP 1000, hose, adapters and reference instrument	LPP-H-KOFFER
Adapter BSP	st.st. Adapter set (BSP) incl. spare O-rings, for test specimen port: 1/8" BSP, 3/8" BSP, 1/2" BSP M & F	LPP-ADAPTER-BSP
Adapter NPT	st.st. Adapter set (NPT), for test specimen port: 1/8" NPT, 1/4" NPT, 3/8" NPT, 1/2" NPT	LPP-ADAPTER-NPT
Adapter metric	st.st. Adapter set (metric) incl. spare O-rings, for test specimen port: M 12 x 1.5 and M 20 x 1.5	LPP-ADAPTER-M
Service	Service kit (seals, gaskets, ...) for LPP 1000	LPP-H-WARTUNG
Fluid	Special operating oil for LPP 1000 (1 l bottle)	CPB5000-FLUID
Analogue referenz-pressure gauge LPP-MANO 	Analogue reference pressure gauge DS 100 mm (4") Dial with fine graduation, knife pointer, pressure port 1/2" BSP male, range 0 - 60 bar / 0 - 800 PSI Accuracy $\pm 0.6\%$ f.s.	LPP-MANO-0060
	Ditto, 0 - 100 bar / 0 - 1400 PSI, accuracy $\pm 0.6\%$ f.s.	LPP-MANO-0100
	Ditto, 0 - 160 bar / 0 - 2000 PSI, accuracy $\pm 0.6\%$ f.s.	LPP-MANO-0160
	Ditto, 0 - 250 bar / 0 - 3000 PSI, accuracy $\pm 0.6\%$ f.s.	LPP-MANO-0250
	Ditto, 0 - 400 bar / 0 - 5000 PSI, accuracy $\pm 0.6\%$ f.s.	LPP-MANO-0400
	Ditto, 0 - 600 bar / 0 - 8000 PSI, accuracy $\pm 1.0\%$ f.s.	LPP-MANO-0600
	Ditto, 0 - 1000 bar / 0 - 14500 PSI, accuracy $\pm 1.0\%$ f.s.	LPP-MANO-1000
Recommended precision reference pressure instruments:		Accuracy:
• Electronic process calibrator LPC 300		$\pm 0.025\%$ f.s.
• Electronic pressure calibrator LPC 200		$\pm 0.025\%$ f.s. / $\pm 0.1\%$ m.v.
• Electronic pressure calibrator TLDMM		$\pm 0.05\%$ f.s.
• Digital precision reference pressure gauge TLDMM-A01		$\pm 0.1\%$ f.s.
• Digital precision reference pressure gauge TLDMM-A02		$\pm 0.2\%$ f.s.
• Digital test pressure gauge LDM 70-E25		$\pm 0.25\%$ f.s.
• Digital test pressure gauge LDM 70-K50		$\pm 0.5\%$ f.s.



Digital Reference Test Pressure Gauge LDM 70 LDM 70-E25: Accuracy $\pm 0.25\%$ f.s. / LDM 70-K50: Accuracy $\pm 0.5\%$ f.s.

- Battery powered, rugged, rotatable housing (DS 70 mm)
- 4.5-digit LC display (digit height 11 mm)
- 6-digit additional display to show the selected pressure unit (height 7.5 mm)
- Pressure unit switchable (PSI-bar-mbar-mWGs-inHg-cmHg-mmHg-kPa-MPa)
- Easy configuration via three push buttons
- Ingress protection IP 65
- Ranges from 0/1.45 psi to 0/8700 psi (0/100 mbar to 0/600 bar)
- MIN and MAX value storage



The display is continuously rotatable so that a clear readability is guaranteed even in unusual installation positions. The LDM 70 can be operated menu-driven via three pushbuttons. Besides showing information about the nominal pressure range as well as minimal and maximal pressure of the process, several pressure units (PSI, bar, mbar, mWc, inHg, cmHg, mmHg, kPa, MPa) and the position of the decimal point can be set. The instruments zero and span can be recalibrated, the LDM 70 can be set to factory default values via menu.

Technica data:	Type LDM 70-E25	Type LDM 70-K50
Pressure Ranges: (see tab. on back page)	all standard ranges, gauge pressure, absolute pressure, vacuum and compound ranges	all standard ranges 0/1.6 bar to 0/400 bar
Nominal case diameter:	DS 70 mm / 27.6 inches	
Accuracy (as per IEC 60770):	$\pm 0.25\%$ f.s. (ranges ≤ 5.8 psi / 400 mbar: $\pm 0.5\%$ f.s.)	$\pm 0.5\%$ f.s.
Measuring rate:	5 per second	
Thermal error (zero-point and span within temperature compensated range)	Tolerance band: Ranges ≤ 0.1 bar: $\leq \pm 2.0\%$ f.s.; average TC: $\pm 0.3\%$ f.s. / 10 K Ranges ≤ 0.25 bar: $\leq \pm 1.5\%$ f.s.; average TC: $\pm 0.2\%$ f.s. / 10 K Ranges ≤ 0.4 bar: $\leq 1.0\%$ f.s.; average TC: $\pm 0.14\%$ f.s. / 10 K Ranges ≤ 1.0 bar: $\leq 0.1\%$ f.s.; average TC: $\pm 0.1\%$ f.s. / 10 K Ranges > 1.0 bar: $\leq \pm 0.75\%$ f.s.; average TC: $\pm 0.07\%$ f.s. / 10 K	$\leq \pm 0.2\%$ f.s. / 10 K
Temp. compensated range:	Ranges ≤ 0.4 bar: 0...50°C; ranges > 0.4 bar: 0...70°C	-25...+85°C
Permissible temperatures:	Medium: -4/+185°F=-20/85°C; Ambient: -4/+158°F=-20/70°C; Storage: -22/+176°F=-30/80°C	
Material display housing:	PA 6.6 polycarbonate	
Material pressure port:	stainless steel 1.4571 / 1.4435	
Material diaphragm:	stainless steel 1.4435	ceramic Al ₂ O ₃ 96%
Material seals:	wetted seals: FKM (optional: EPDM, NBR, others on request)	
Display:	LCD 1.57" x 1.18"= 40 x 30 mm; 4 1/2 digit 7-segment-main display, digit height 11 mm, Indication range ± 19999 ; 6-digit 14-segment additional display, digit height 7.5 mm	
Electromagnetic compatibility:	emission and immunity according to EN 61326	
Mechanical stability:	vibration: 5 g RMS (20...2000 Hz); shock: 100 g / 11 msec.	
Supply:	3.6 V lithium batteries, 2 pcs. (type 1/2 AA)	
Data memory:	EEPROM (non-volatile)	
Ingress protection:	IP 65	
Installation position:	any (the LDM 70 is calibrated in vertical position with pressure port down. If this position is changed on installation, there can be slight deviations in the zero-point for LDM-70-E25 ranges < 1 bar)	
Other data:	weight 300 g; AD-converter solution: 10 Bit; mech. operational life: $> 100 \times 10^6$ pressure cycles; battery life: app.. 5 years in standby mode;	
Pressure port:	1/2" BSP male, 1/4" BSP male, 1/2" NPT male, 1/4" NPT male	



Die Digital test pressure gauges **LDM 70** are available as complete pressure calibration kits (case, with calibration handpump LPP 30). The calibration handpump LPP 30 generates pressure up to 500 psi (35 bar), switchable to vacuum generation -28 in Hg.

For higher pressure ranges, the Digital test pressure gauges **LDM 70** can be supplied as pressure calibration kit together with the hydraulic pressure comparators **LSP** series.



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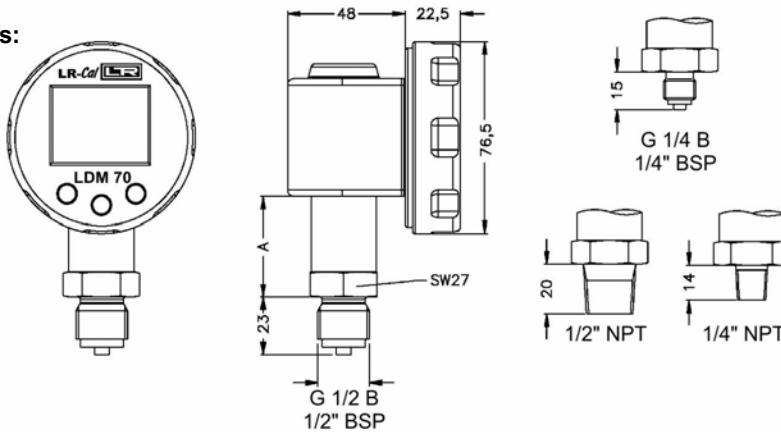
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Dimensions:



dimension "A" for
type **LDM70-E25**: 35 mm

dimension "A" for
type **LDM70-K50**: 41.5 mm

Order-Codes and Pressure Ranges:

L	D	M	7	0	-					-				-			
---	---	---	---	---	---	--	--	--	--	---	--	--	--	---	--	--	--

Accuracy ± 0.25 f.s.

E 2 5

Accuracy ± 0.5 f.s.

K 5 0

*)	Range 0...1.45 psi / 0...100 mbar	8	1	0	0	-	0				
*)	Range 0...2.32 psi / 0...160 mbar	8	1	6	0	-	0				
*)	Range 0...3,63 psi / 0...250 mbar	8	2	5	0	-	0				
*)	Range 0...5.80 psi / 0...400 mbar	8	4	0	0	-	0				
**)	Range 0...8.70 psi / 0...0,6 bar	0	0	0	0	-	6				
**)	Range 0...14.5 psi / 0...1 bar	0	0	0	1	-	0				
	Range 0...23.2 psi / 0...1,6 bar	0	0	0	1	-	6				
	Range 0...36.3 psi / 0...2,5 bar	0	0	0	2	-	5				
	Range 0...58.0 psi / 0...4 bar	0	0	0	4	-	0				
	Range 0...87.0 psi / 0...6 bar	0	0	0	6	-	0				
	Range 0...145.0 psi / 0...10 bar	0	0	1	0	-	0				
	Range 0...232.1 psi / 0...16 bar	0	0	1	6	-	0				
	Range 0...362.6 psi / 0...25 bar	0	0	2	5	-	0				
	Range 0...580.2 psi / 0...40 bar	0	0	4	0	-	0				
	Range 0...870.2 psi / 0...60 bar	0	0	6	0	-	0				
	Range 0...1450 psi / 0...100 bar	0	1	0	0	-	0				
	Range 0...2321 psi / 0...160 bar	0	1	6	0	-	0				
	Range 0...3626 psi / 0...250 bar	0	2	5	0	-	0				
	Range 0...5802 psi / 0...400 bar	0	4	0	0	-	0				
**)	Range 0...8702 psi / 0...600 bar	0	6	0	0	-	0				
**)	Range -30 / 0 in Hg / -1/0 bar	0	0	0	0	-	0				
**)	Range -30 inHg / +8.7 psi / -1/+0,6 bar	9	0	0	0	-	6				
	Range -30 inHg/+22 psi / -1/+1,5 bar	0	0	0	1	-	5				
	Range -30 inHg/+43.5 psi / -1/+3 bar	0	0	0	3	-	0				
	Range -30 inHg/+72.5 psi / -1/+5 bar	0	0	0	5	-	0				
	Range -30 inHg / +130.5 psi / -1/+9 bar	0	0	0	9	-	0				
	Range -30 inHg/+217.6 psi / -1/+15 bar	0	0	1	5	-	0				
	Range -30 inHg/+348 psi / -1/+24 bar	0	0	2	4	-	0				
	Range -30 inHg/+565.6 psi / -1/+39 bar	0	0	3	9	-	0				

perm. overpressure (bar), type LDM70-	available as absolute range	
	-E25-	-K50-
0,5	-	no
0,5	-	no
1	-	no
1	-	no
3	-	no
3	-	no
6	4	yes
6	4	yes
20	10	yes
20	10	yes
20	20	yes
60	40	yes
60	40	no
100	100	no
140	100	no
340	200	no
340	400	no
600	400	no
600	600	no
1000	-	no
1	-	no
3	-	no
6	4	no
20	4	no
20	10	no
20	20	no
60	40	no
60	40	no
100	100	no

Pressure Port thread 1/2" BSP male (standard)

G 1 2

Pressure Port thread 1/4" BSP male

G 1 4

Pressure Port thread 1/2" NPT male

N 1 2

Pressure Port thread 1/4" NPT male

N 1 4

*)

= only with accuracy ± 0.5 as type LDM-70-E25 available

**)

= only with accuracy ± 0.25 as type LDM-70-E25 available

Order-Code for
extra charge for
Absolute version:
LDM70-MP-ABS



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TLDMM-A01: Digital Test Pressure Gauge $\pm 0.1\%$ f.s.
TLDMM-A02: Digital Test Pressure Gauge $\pm 0.2\%$ f.s.

- Ranges up to 2000 bar available
- 1 year autonomy without recharging (battery operated)
- Pressure units "bar", "mbar", "psi", "MPa", "kPa" switchable
- PEAK function (positive and negative)
- Digital Filter (programmable)
- Pressure connection: 1/2" BSP male
- Clear easy to read LCD display with large numbers

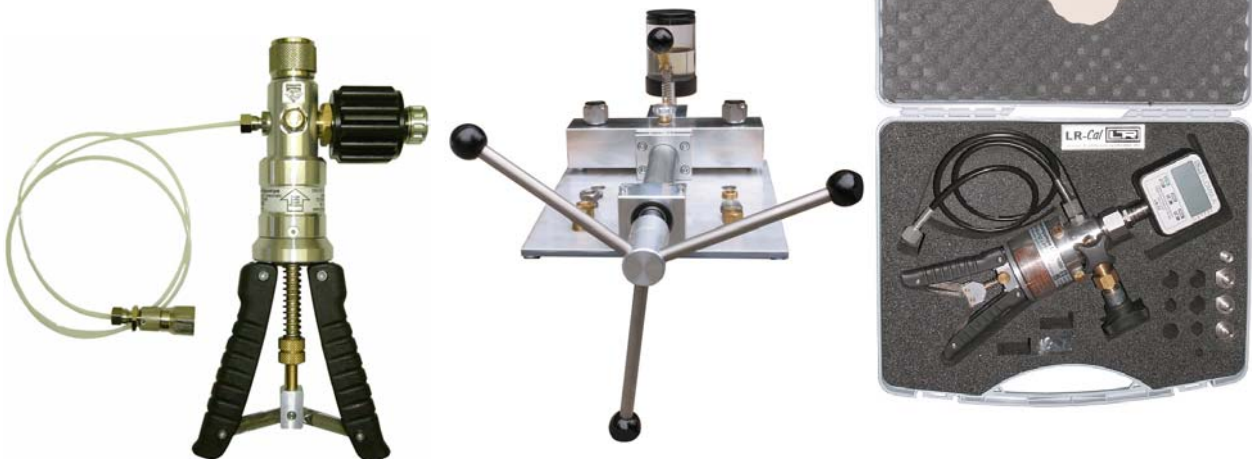


The **TLDMM-A01** and **TLDMM-A02** are microprocessor based digital test pressure gauges, made of particularly high long-term stable analogue section and an 16 bit A/D converter which ensure 65,000 internal divisions. These features, together with a 0.1% accuracy class (type TLDMM-A01) resp. 0.2% accuracy class (type TLDMM-A02), make them ideal as a laboratory instrument: in fact the **TLDMM-A01** and **TLDMM-A02** are proposed as a first line sample for Calibration Laboratories.

The digital test pressure gauges **TLDMM-A01** and **TLDMM-A02** have internal batteries with 1 year autonomy, also guaranteed by the Auto-PowerOff function, which activates if no measurements changes are detected in the previous 30 minutes. A **certificate of calibration** is included to each instrument.

The user can select different engineering units (psi, bar, mbar, MPa, KPa), resolution and digital filter, suitable for measurements to be performed. In order to increase the level of integration among components, a combined (traditional and SMT) technology has been used, that makes this test pressure gauges more resistant against mechanical stresses and vibrations and guarantees maximum reliability for the circuit. The display also shows an analogue indication bar for pressure, that is still on, even in the programming menu.

As an option, the **TLDMM-A01** and **TLDMM-A02** are available with a RS232 interface. A connection cable and a simple Software to read out the RS232 interface can be supplied on request. Furthermore, a version for mains power supply 230 VAC is available.



The **TLDMM-A01** and **TLDMM-A02** can be used with portable or stationary calibration pressure sources like **LPP 30** pneumatic calibration handpump (*left image*), in a kit **LPP-KIT-HD-20** with **LPP 700** or **LPP 1000** hydraulic handpump (*right image*), or with **LSP** pressure comparison spindle pumps (*center image*).

www.LR-Cal.com



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Digital Reference Pressure Indicator Type TLDMM (electronic Pressure Calibrator)

- **Accuracy: $\pm 0.05\%$ v.E., Ranges up to 2000 bar available**
- 1 year autonomy without recharging (battery operated)
- Pressure units "bar", "mbar", "psi", "MPa", "kPa" switchable
- PEAK function (positive and negative)
- Digital Filter (programmable)
- Pressure connection: 1/2" BSP male
- Clear easy to read LCD display with large numbers
- Including S.I.T. Calibration Certificate (similar to DKD cert.)



The **TLDMM** is a microprocessor based digital pressure gauge, made of particularly high long-term stable analogue section and an 16 bit A/D converter which ensure 65,000 internal divisions. These features, together with a 0.05% accuracy class, make it ideal as a laboratory instrument: in fact the **TLDMM** is proposed as a first line sample for Calibration Laboratories and is provided with a S.I.T. calibration certificate, traceable to international standard.

The pressure calibrator **TLDMM** has internal batteries with 1 year autonomy, also guaranteed by the Auto-PowerOff function, which activates if no measurements changes are detected in the previous 30 minutes.

The user can select different engineering units (bar, mbar, psi, MPa, KPa), resolution and digital filter, suitable for measurements to be performed. In order to increase the level of integration among components, a combined (traditional and SMT) technology has been used, that makes this reference gauge more resistant against mechanical stresses and vibrations and guarantees maximum reliability for the circuit. The display also shows an analogue indication bar for pressure, that is still on, even in the programming menu.

A carrying case and a S.I.T. calibration certificate (similar to DKD certification) are included in standard supply.

As an option, the **TLDMM** is available with a RS232 interface. A connection cable and a simple Software to read out the RS232 interface can be supplied on request. Furthermore, a build-in version for panel mounting and a version with mains power supply are available.



Image 1



Image 2

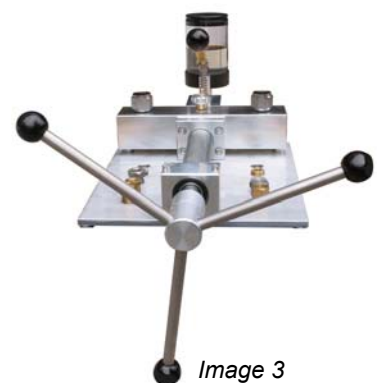


Image 3

The **TLDMM** can be used with portable or stationary calibration pressure sources like LSP spindle pumps and portable calibration pump **LPP 30** (pneumatic) and / or **LPP 700 - LPP 1000** (hydraulic).

Image 1: Hydraulic Calibration Handpump **LPP 700**

Image 2: calibration kit **LPP-KIT-PD-20** with **LPP 30**

Image 3: pressure comparison pump **LSP**



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Technical Data:

Linearity and Hysteresis:	≤±0.05% FS
Readings per sec. (0 filter)	10 (100 ms)
Temperatures:	Reference: +23°C, Ambient 0...+50°C, Storage -10...+60°C
Temperature Effect (1°C):	on Zero ≤±0,002%; on Sensitivity ≤±0,002%
Programmable Functions:	Zero: 50%, digital Filter: 0...99% Display Resolution: 1, 2, 5 or 10 Digits Pressure Units: bar, mbar, MPa, kPa, psi Baudrate RS232 (Option): 19200, 9600, 4800 Peak-Function: Positive (+) and Negative (-)
Display:	LCD, height 16 mm
Power Supply:	4 Alkaline Batteries 1,5 V (size AA)
Mechanical Limit Values (referred to nominal pressure):	Service Pressure: 100% FS; High Dynamic Pressure: 75% FS Permissible Pressure: max. 150% FS; Breaking Pressure: >300% FS
Standard Process Coupling:	1/2 BSP male
Recommended Gasket:	USIT A 63-18
Tightening Torque:	28 Nm (Tightening Wrench: 27 mm)
Housing:	Material: Aluminium, Dimensions: appr. 132 x 80 x 48 mm
Protection:	IP 40
RS232-Interface (optional)	9-pole D-SUB (female)

Order Code:

T L D M M - [] [] [] [] - [] [] [] [] [] []

Range:									max. Resolution	
0-14.5 psi / 0-1 bar	0	0	0	1	R	S	2	3	2	0.0001 bar
0-36 psi / 0-2.5 bar	0	0	0	2						0.0005 bar
0-72.5 psi / 0-5 bar	0	0	0	5	(space/empty)					0.0005 bar
0-145 psi / 0-10 bar	0	0	1	0						0.001 bar
0-290 psi / 0-20 bar	0	0	2	0						0.002 bar
0-725 psi / 0-50 bar	0	0	5	0						0.005 bar
0-1450 psi / 0-100 bar	0	1	0	0						0.01 bar
0-3626 psi / 0-250 bar	0	2	5	0						0.02 bar
0-5076 psi / 0-350 bar	0	3	5	0						0.05 bar
0-7252 psi / 0-500 bar	0	5	0	0						0.05 bar
0-10153 psi / 0-700 bar	0	7	0	0						0.05 bar
0-14503 psi / 0-1000 bar	1	0	0	0						0.1 bar
0-21756 psi / 0-1500 bar	1	5	0	0						0.2 bar
0-29007 psi / 0-2000 bar	2	0	0	0						0.5 bar
-30 inHg/+14.5 psi -1/+1 bar	1	0	1	0						0.0001 bar
-30 inHg/+35 psi / -1/+2,5 bar	1	0	2	5						0.0005 bar
-30 inHG/+72.5 psi / -1/+5 bar	1	0	5	0						0.0005 bar
-30 in Hg/+290 psi / -1/+20 bar	1	0	2	0						0.02 bar

Recommended Accessory: Usage of TLDMM with **LPP 30**: volume reducer, order-code **VRS-G12**.

Option: build-in version for panel mounting 83 x 83 mm, back conn.: add **EBA** to the order-code of the instrument

Option: mains power supply 230 VAC (instead of batteries): add **SNT** to the order-code of the instrument



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Electronic Pressure Calibrator LPC 200, changeable pressure sensors

- Very simple operation, easily-read display (backlighting selectable)
- Changeable reference sensors (plug & play)
this means, up to 10 pressure ranges with one instrument
- Ranges from 0...5.8 psi (400 mbar) up to 0...58000 psi (4000 bar) (also vacuum-, compound- and absolute pressure ranges)
- Accuracy up to 1000 bar: $\pm 0.025\%$ f.s.; up to 4000 bar: $\pm 0.15\%$ f.s.
- Logging function, pressure rate, min-/max value, Bargraph, Tare
- Issue calibration certificates with optional PC-Windows®-software **LPC-Cal**
- Pressure calibration kit's, complete with calibration hand pumps as portable pressure source
- Chargeable Lithium-Ion battery, incl. Charger, USB-interface
- Switchable pressure unit PSI, bar, mbar, kPa, mmHg, inHg



Together with a suitable calibration pressure source like the calibration hand pumps LPP 30 (pneumatic) or LPP 700 / LPP 1000 (hydraulic), the **LPC 200** offers a precision pressure calibration system, suitable also for use on site, portable. The **LPC 200** also opens up other helpful applications, e.g. recording of pressure curves (logging function), leak testing (pressure rate function). These useful functions can be easily activated or deactivated by pressing the respective keys.

A factory calibration certificate for each reference sensor certifies the total uncertainty of the measuring chain. Alternatively, on request, a DKD calibration certificate can be supplied.



Using the optional **LPC-Cal** software, the logged data, stored in the **LPC 200**, can be transferred to a PC via a USB connection, where it can be stored in an Excel® file for documentation and further evaluation. In addition, **LPC-Cal** offers the possibility of PC-supported calibration of pressure measuring instruments using the **LPC 200**.

Technical Data (Indicator LPC 200 together with reference sensor LPC-2):

Standard Pressure Ranges (PSI)	5.8	23.2	87	232	580	1450	3626	8700	14500
Standard Pressure Ranges (bar)	0.4	1.6	6	16	40	100	250	600	1000
Overpressure safety (bar)	2	10	35	80	80	200	500	1200	1500
Burst pressure (bar)	2.4	12	42	96	400	800	1200	2400	3000
Accuracy (Total uncertainty of measurement chain)	0.025% FS, calibrated at 23°C and in vertical mounting position with pressure conn. facing down.								
High Pressure Ranges (PSI)	23200	36200	58000						
High Pressure Ranges (bar)	1600	2500	4000						
Overpressure safety (bar)	2000	3000	4400						
Burst pressure (bar)	4000	5000	7000						
Accuracy (Total uncertainty of measurement chain)	0.15% FS (calibrated at 23°C and in vertical mounting position with pressure conn. facing down.)								
Type of pressure	see above (standard and high pressure ranges) but also vacuum-, compound- and absolute pressure ranges								
Units of pressure	bar, mbar, kPa, mmHg, inHg, PSI (depending on range, switchable)								
Active temperature compensation	+10...+40°C								
Permissible ambient temperature	0...+50°C								
Calibration	Traceable factory certificate of calibration (optional: DKD certificate of calibration)								



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Technical Data Indicator LPC 200:

Display	large graphic display, with backlighting on/off selectable
Display resolution	up to 6 digits, selectable
Measuring rate (pressure)	5 values per second
Functions	min-, max-memory, tare, pressure rate, filter, zeropoint-adjustment
Data logger	up to 1000 values, cycle time adjustable 1...3600 seconds
Interface	USB
Power supply	internal Lithium-Ion rechargeable battery (charging time <6 h) alternative: mains supply via charger
Battery operation	approx. 25 hours
Permissible air humidity	0...85% r.h. at 50°C, non-condensing
Permissible storage temperature	-20...+60°C
Housing material	Polyamide 12, membrane keyboard, transparent panels
Ingress protection	IP 65
Weight (without sensor)	approx. 480 g
Dimensions (without Sensor)	width x height x depth: 75/106 x 50/82 x 194 mm
CE-conformity	interference emission and immunity to EN 61326 declaration of conformity on request

Technical Data Reference Sensors LPC-2:

Pressure connection	up to 1000 bar: 1/2" BSP male (other on request) >1000 bar: high pressure port M16 x 11,5 female, with sealing cone
Wetted parts (material)	stainless steel
Permissible medium temperature	-30...+105°C
Permissible storage temperature	-40...+85°C
Housing material	stainless steel
Electrical connection	round plug, 8-pole, suitable for LPC 200
Weight	approx. 220 g
Dimensions	diameter x height: 40 x 102,5 mm
CE-conformity	89/336/EWG interference emission and immunity to EN 61326 97/23/EG pressure equipment directive (module H)

Scope of Supply:

- Indicator **LPC 200**
- 1 reference sensor **LPC-2** (optional up to 9 more reference sensors = pressure ranges possible)
- Factory certificate of calibration 3.1 as per EN 10204
- Battery charger 115...230 VAC, incl. several adaptors
- Operating manual

Options / Accessories:

- DKD certificate of calibration
- Thread adaptors for pressure connection
- MINIMESS® quick-connectors and hoses
- **LPC200-MAH magnetic hook**
- **LPC200-SCH supporting loop**
- USB interface cable and PC-Windows-Software **LPC-Cal**
- Calibration handpump LPP 30, LPP 700, LPP 1000 and case (complete pressure calibration kit's LPP-KIT)



LPC200-MAH

LPC200-SCH



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LPC 300 Documenting Process Calibrator Accuracy $\pm 0.025\%$ FSO

The electronic pressure calibrator **LPC 300** is used for high precision calibration of pressure instruments, e.g. pressure gauges, pressure transmitter, digital manometer, pressure switches, overpressure protection valves, etc.

The **LPC 300** is a very user-friendly, accurate and compact solution for pressure comparison calibrations. The built-in reference sensor is changeable, several pressure ranges can be covered with one **LPC 300** unit (up to 10).



All standard pressure ranges between 0...250 mbar (0...4 psi) and 0...1000 bar (0...14500 psi) are available as well as vacuum and absolute pressure ranges in accuracy $\pm 0.025\%$ FS. Furthermore, ranges 1600 bar, 2500 bar and 4000 bar are available with accuracy $\pm 0.15\%$ FS.

The electronic pressure calibrator **LPC 300** measures pressure, voltage and current and supplies 24 VDC as source for transmitter. Calibration procedures can be pre-defined and used for calibrations on site. The **LPC 300** is featured with USB- and RS232-interfaces and is powered by a Lithium-Ion battery (rechargeable, without memory-effect).

Features:

- precise, high resolution, compact, rigid
- pressure ranges 0/250 mbar to 0/1000 bar
0/4 psi to 14500 psi, and vacuum & absolute ranges with accuracy $\pm 0.025\%$ FS
- pressure ranges 0/1000 bar, 0/1600 bar and 0/4000 bar with accuracy $\pm 0.15\%$ FS
- changeable reference sensor LPC-S
- all standard pressure units (plus one self-definable)
- conversion pressure to current/voltage and vice versa
- stores calibration data (plus integrated real time clock)
- pressure switch test function (switch point adjustment)
- menu-driven operating in English or German language (other languages on request)
- large illuminated display, lithium-ion battery powered
- power supply 24 VDC for pressure transmitters
- USB- and RS232 interface
- calibration certificate, traceable to national standard included in standard supply for pressure. voltage and current



LPC 300 with calibration pump LPP 30 "on site"



Pressure comparison pump LSP with LPC 300

In "measuring" operation, the **LPC 300** displays simultaneously:

- reference pressure
- output of unit under test
- deviation (in selected pressure unit)
- deviation (in % of full scale of unit under test)

This means very easy checking whether unit under test is within its specified accuracy class. The reference sensors have a welded st.st. diaphragm for use also with aggressive fluids and media which are compatible with stainless steel 1.4571



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The **LPC 300** has a numeric keypad and separate cursor keys.

Together with the clear text menus, the result is a very easy use and operation of the **LPC 300**.

Note: the images are showing the German language version of the operating system. Language can be switched to English, French, Italian and Spanish.



The electronic pressure calibrator **LPC 300** can be operated in three different modes:

1) Measuring Mode



configure..

First, the unit under test must be defined:

- mechanical (e.g. pressure gauge) or electronic (e.g. pressure transmitter)
- Pressure range: start and end
- Accuracy class (of full scale or of reading)
- Pressure unit
- gauge or absolute
- gaseous or fluid medium
- power supply 24 VDC on or off



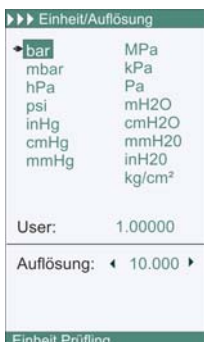
...and calibrate

Now the comparison calibration can be made:

The display shows:

- Pressure range of the **LPC 300** reference sensor LPC-S
- True pressure as measured by the **LPC 300**
- Pressure range of unit under test
- Output signal of unit under test (measured if it is a pressure transmitter, to be entered if it is a pressure gauge without electr. output signal)
- Deviation (in selected pressure unit of unit under test)
- Deviation (in % of full scale of unit under test)

With one view the operator sees whether the unit under test is within its specification (accuracy class) or not.



15 different pressure units are available,

one additional pressure unit can be defined by the user.

The resolution adjustment (decimal point setting) can be made very comfortable.



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2) Calibration



In this mode, calibration procedures can be pre-defined, incl. management of units under test. One procedure has following data:

- Same like in "Measuring" mode, but in addition:
- Calibration Number (program no.)
 - Serial number of unit under test
 - location number of unit under test
 - test pressure points (up to 32 for each unit under test)
 - dwell time (sec.) between test pressure points

Up to 16 units under test with each 32 test points can be managed by the **LPC 300** at a time.



Later on, it can be worked on the pre-defined calibration procedures on site. The values are saved in the internal memory of the **LPC 300** and can be transmitted to a PC via the USB- or RS232 interface.

Also in this "Calibration" mode the operator can see on one view wether the unit under test is within it's specification or not.

With the (optional) PC software **LPC-Cal** the calibration data can be downloaded and printed out (via MS-Excel).

...and calibrate

3) Pressure Switch - Test

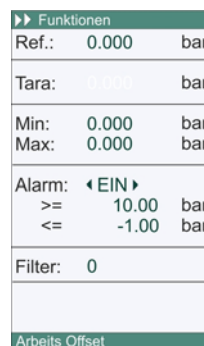


After specification of the unit under test (pressure range, power supply 24 VDC yes/no), the electronic pressure calibrator **LPC 300** shows the actual status of the pressure switch.

Also the pressures at closing and at opening are displayed, together with the hysteresis.

Several basic parameters can be entered into the **LPC 300**, e.g.:

- ambient temperature
- fluid level difference of unit under test
- language (English / German / French / Italian / Spanish)
- setting the real time clock
- setting the display
- setting of the powersafe function
- indicating battery level
- Tara value (offset)
- indicating min-max- values
- setting/indicating alarm values
- digital software-filter
- USB- and RS232-settings



Note: the images are showing the German language version of the operating system. Language can be switched to English and others.



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Technical Data:

Available LPC 300 reference pressure sensors LPC-S $\pm 0.025\%$ FSO, 1/2" BSP male

Pressure Range [bar]		overpressure [bar]	burst pressure [bar]
0...0.25	gauge	1.6	2.4
0...0.4	gauge or absolute	2	2.4
0...0.6	gauge or absolute	4	4.8
0...1	gauge or absolute	5	6
0...1.6	gauge or absolute	10	12
0...2.5	gauge or absolute	10	12
0...4	gauge or absolute	17	20.5
0...6	gauge or absolute	35	42
0...10	gauge or absolute	35	42
0...16	gauge or absolute	80	96
0...25	gauge or absolute	50	96
0...40	gauge	80	400
0...60	gauge	120	550
0...100	gauge	200	800
0...160	gauge	320	1000
0...250	gauge	500	1200
0...400	gauge	800	1500
0...600	gauge	1200	1500
0...700	gauge	1200	1500
0...1000	gauge	1500	3000
-0.4...0	gauge	2	2.4
-0.6...0	gauge	4	4.8
-1...0	gauge	5	6
-0.25...+0.25	gauge	1.6	2.4
-0.4...+0.4	gauge	2	2.4
-0.6...+0.6	gauge	4	4.8
-1...+1.5	gauge	10	12
-1...+3	gauge	17	20.5
-1...+5	gauge	35	42
-1...+9	gauge	35	42
-1...+15	gauge	80	96
-1...+20	gauge	50	96
-1...+24	gauge	50	96
-1...+39	gauge	80	400

Accuracy: $\pm 0.025\%$ FSO *)
 Further ranges 0/1600 bar, 0/2500 bar and 0/4000 bar available with accuracy $\pm 0.15\%$ FSO.
Overpressure warning: audio visual
Temperature compensation: active, 0...50°C
Wetted parts: stainless steel, welded; Thread: 1/2" BSP male
Resolution: adjustable, max. 6 digits +prefix +decimal point
Measurement voltage: 0-10 V, 0-5 V, 0-1 V
 Resolution: display x 0,1 mV, accuracy ± 0.5 mV
Measurement current: 0-20 mA, 4-20 mA
 Resolution: display x 1 μ A, accuracy ± 1.6 μ A
Voltage supply: 24 VDC min. 20 mA, max. 50 mA tolerance ± 1 V, switchable via user-menu.
Operation conditions: 0°C... 50°C, max. 80% r.h. non-cond. (during battery charging: 0...45°C)
Storage: -20°C...+60°C, max. 80% r.h. non-condensing
Graphic display: high resolution TFT colour display
Storage capacity: 16 units under test, each 32 test points
RS232-Parameter: 4800, 9600 or 11200 Baud, adjustable
Battery: Lithium-Ion with intelligent charging electronics
Battery charger: 230 VAC 50/60 Hz (other on request)
Electrical connections:
 charging plug 9V / 450 mA ± 50 mA, with metal protection cap
 PC communication: USB and RS232, with metal prot. cap
 Measurement plugs:: 4 mm standard plugs for:
 current measurement 0/4-20 mA
 voltage measurement 0-1/5/10 V
 pressure switch
 Voltage supply: 24 V / 50 mA
Dimension: 12.5 x 21 x 8 cm (width x height x depth)
Weight: appr. 1.1 kg



LPC 300 electr. measurement plugs
voltage & current input, voltage output,
pressure switch, USB/RS232, battery charger

The LPC 300 can manage up to 10 sensors LPC-S (different ranges).

*) calibrated at +23°C, incl. linearity, hysteresis and repeatability

Optional Accessories:

- rubber protection caps for electrical measuring plugs (IP 54)
- electr. extension cable for reference sensor (herewith the reference sensor can be used "outside" the **LPC 300** unit for more flexibility). Always needed for LPC-S ranges 1600/2500/4000 bar.
- carrying case with custom foams



Mess- und Kalibriergeräte **günstig** und **unkompliziert** im Internet einkaufen:
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Elektronische Druckkalibratoren

Druckkalibratoren Genauigkeiten $\pm 0,025\%$ / $\pm 0,05\%$ v.E.
 Prozesskalibratoren Genauigkeit $\pm 0,025\%$ v.E.
 Druckkalibrator für niedrige Drücke
 Druck-Controller für niedrige Drücke

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LR-Cal Temperatur-Kalibratoren

- Präzisions-Referenzthermometer
- Metallblock-Temperaturkalibratoren
- Kalibrierbäder (portabel)
- Multifunktions-Kalibratoren/Simulatoren

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