Highly Precise Digital Manometer

LEX 1 / LEX 1 Ei

PRECISION**: 0,01 %FS / RS485 BUS INTERFACE

LEX 1 is a micro-processor controlled, accurate and versatile digital pressure measuring instrument for calibration and testing purposes with 0,05 %FS standard accuracy. Option for precision 0,01% available as extra feature. Via the RS485 Bus Interface, communication with up to 128 connected instrument can take place.

The pressure is measured twice per second and displayed. The top display indicates the actual pressure, the bottom display shows the Max.- or Min.-pressure.

LEX 1 with piezo-resistive pressure sensor

LEX 1 with capacitive pressure sensor

ATEX / IECEx

LEX 1 devices which are marked with “LEX 1 Ei” are intrinsically safe for use in hazardous areas (by approval for both ATEX and IECEx standards).

Function

LEX 1 has two operating keys. The left key is to turn the instrument on, to select the functions and the pressure units. The right key executes the selected function resp. unit or serves to display the Max.- and Min.-value.

The instrument has the following functions

RESET	With the RESET-function, the Max.- and Min.-value is set to the actual pressure value.
ZERO	Using the Zero-function will set any prevailing pressure to be the new zero point reference.
CONT	The instrument turns off 15 min. after the last key function. Activating CONT (Con-ti-nuous) deactivates this automatic turn-off.
UNITS	All standard instruments are calibrated in bar. The pressure can be indicated in 13 different units.

Scope of Delivery

Carrying case and 5-point calibration certificate.

Optional Accessories

Carrying bag, protective rubber covering, interface converter K-114A

CE

Standard Pressure Ranges[1] LEX 1 (Ei) piezoresistive

	Ranges	Resolution Display	Overpressure
PAA/PR	-1…2 bar	0,1 mbar	6 bar
PAA/PR	-1…10 bar	1 mbar	20 bar
PAA/PR	-1…20 bar	1 mbar	40 bar
PA	0…200 bar	10 mbar	400 bar
PA	0…400 bar	20 mbar	800 bar
PA	0…700 bar	50 mbar	1100 bar
PA	0…1000 bar	100 mbar	1100 bar
Accuracy, Error Band (0...50 °C)	≤ 0,05 %FS		
Long Term Stability	Reference: 1 mbar or 0,05 %FS Absolute: 0,5 mbar or 0,025 %FS		
Optional: Precision	0,01 %FS (only for piezoresistive PA or PAA and ranges ≥ 10 bar)		

Standard Pressure Ranges[1] LEX 1 (Ei) capacitive

	Ranges	Resolution Display	Overpressure	Neg. Overpressure
PR/PD[2]	30 mbar	0,01 mbar	300 mbar	30 mbar
PR/PD[2]	100 mbar	0,01 mbar	1000 mbar	100 mbar
PR/PD[2]	300 mbar	0,1 mbar	1500 mbar	300 mbar
Accuracy, Error Band (0...50 °C)	≤ 0,2 %FS			
Long Term Stability	FS ≥ 100 mbar: ± 0,1 %FS FS ≤ 100 mbar: ± 0,1 mbar			

[1] Other pressure ranges as well as instruments with relative pressure measuring cells, on request
[2] For the PD version, a tube connection Ø 6 mm for the reference is available

PR = Vented Gauge. Zero at atmospheric pressure
PAA = Absolute. Zero at vacuum
PA = Absolute. Zero at atmospheric pressure
PD = Differential.

LEX 1 Ei

Intrinsically Safe Version, 2014/34/EU and IECEx

Classification: Ex II 2 G Ex ia IIC T6 Gb
Certifications File:
PTB 05 ATEX 2012 X and IECEx PTB 13.0028X

In comparision to the standard LEX1 the Ex-proof intrinsically safe version has internally more enhanced protective components mounted and is marked with the EX-logo.

Functions, ranges and accuracy are identical to the standard LEX 1 version.

The factory setting of the zero for the ranges ≤ 61 bar absolute is at vacuum (0 bar absolute). For relative pressure measurements, activate “ZERO SEt” at ambient pressure. Instruments > 61 bar absolute or instruments with a relative pressure sensor (label marked with: Range: rel) are calibrated with the zero at atmospheric pressure.

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Companies approved to ISO 9001
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Specifications

Number of Digits of the LCD Display	5 digit	
Measuring Rate (Display LCD)	2 x per second	
Measuring Rate via Serial Interface	Pressure up to 15 x per second	
Storage- / Operating Temperature	-10…60 °C / 0…50 °C	
Medium Temperature Pressure Sensor	-20…80 °C, others on request LEX 1 Ei max. 60 °C	
Compensated Temperature Range	0…50 °C	
Battery	3 V battery, Typ CR 2430	
Battery Life	approx. 2'000 hours continuous operation	
Pressure Connection	G1/4" (other threads on request)	
Bus Interface [3]	RS485 (KELLER bus protocol)	
Electrical Connection [3]	External supply and RS485 communication via Fischer D103A054, flange socket fits with PC-converter cable K-114A (USB to RS485)	
External Supply [3]	8…28 VDC	
Temperature Measurement	Accuracy typ. 0,5 °C	
Material in Contact with Media	Stainless Steel (AISI 316L), Viton® O-ring. In addition with LEX 1 capacitive: gold plated ceramic diaphragm, Nitril O-ring	
Protection	IP65	
	LEX 1 piezoresistive	LEX 1 capacitive
Diameter x Height x Depth (approx.)	76 x 118 x 55 mm	76 x 148 x 55 mm
Weight (approx.)	300 g	335 g

[3] In the Ex-Zone, the LEX 1 Ei gauges are not allowed to be supplied externally, nor can they be connected via the RS485 interface.

**** Accuracy and Precision**

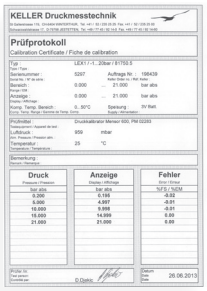
"Accuracy" is an absolute term, "Precision" a relative term. Dead weight testers are primary standards for pressure, where the pressure is defined by the primary values of mass, length and time. Highest class primary standards in national laboratories indicate the uncertainty of their pressure references with 70 to 90 ppM or close to 0,01%.

Commercial dead weight testers as used in our facilities to calibrate the transmitters and manometers indicate an uncertainty or accuracy of 0,025%. Below these levels, KELLER use the expression "Precision" as the ability of a pressure transmitter or manometer to be at each pressure point within 0,01 %FS relative to these commercial standards.

The manometer's full-scale output can be set up to match any standard of your choice by correcting the gain with a calibration software.

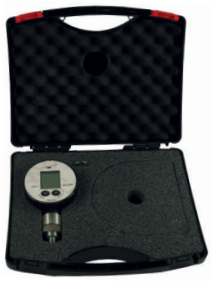
Scope of Delivery

5-point calibration certificate
and carrying case


KELLER Druckmesstechnik

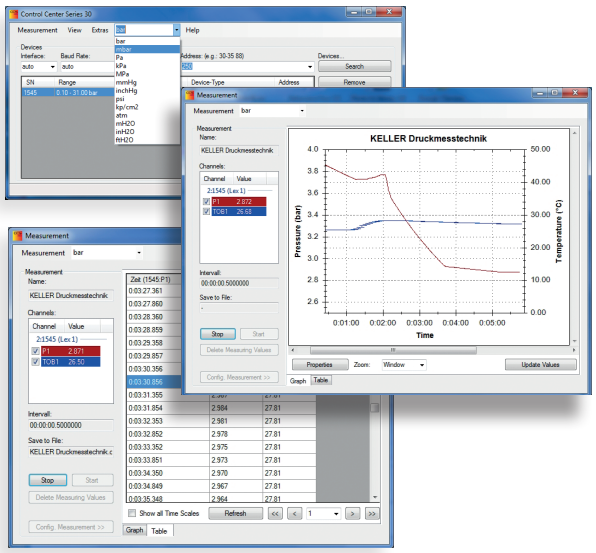
Prüfprotokoll
Calibration Certificate / Fiche de calibration

Druck	Anzeige	Fehler
bar abs	bar abs	%FS / %SM
0.000	0.166	-0.02
5.000	4.997	-0.01
10.000	9.998	-0.01
15.000	14.999	0.00
21.000	21.000	0.00



Computer Software CCS30

Pressure and temperature readings can be displayed and recorded on a PC or Laptop with the help of the software ControlCenter-Series30 (CCS30) and a serial interface cable K-103A (RS232) or K-114A (USB). The software also enables the configuration of the zero point settings. The KELLER bus protocol and programming examples in various programming languages are available. This allows very quick and easy implementation into customer software applications. Up to 128 devices can be connected together into a KELLER Bus-system.



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