

LEO1

Digital gauge with peak value detection

Features

- High accuracy
- Piezoresistive pressure sensor chip, insulated encapsulated
- Energy-efficient: up to 1000 hours of battery life
- For the detection of fast pressure peaks
- Optional: Intrinsically safe version LEO1-Ei available for use in hazardous environments

Functions

- Wide range of pressure units to choose from
- Zero point calibration via buttons
- Automatic shutdown
- Min./max. display
- Switchable between standard measurement mode (2 Hz) and rapid measurement mode (≥ 1 kHz)

Typical applications

- HVAC service device
- Fluid technology
- Pump applications
- Actual value display for calibration pump
- Detecting pressure spikes or surges in systems



Accuracy

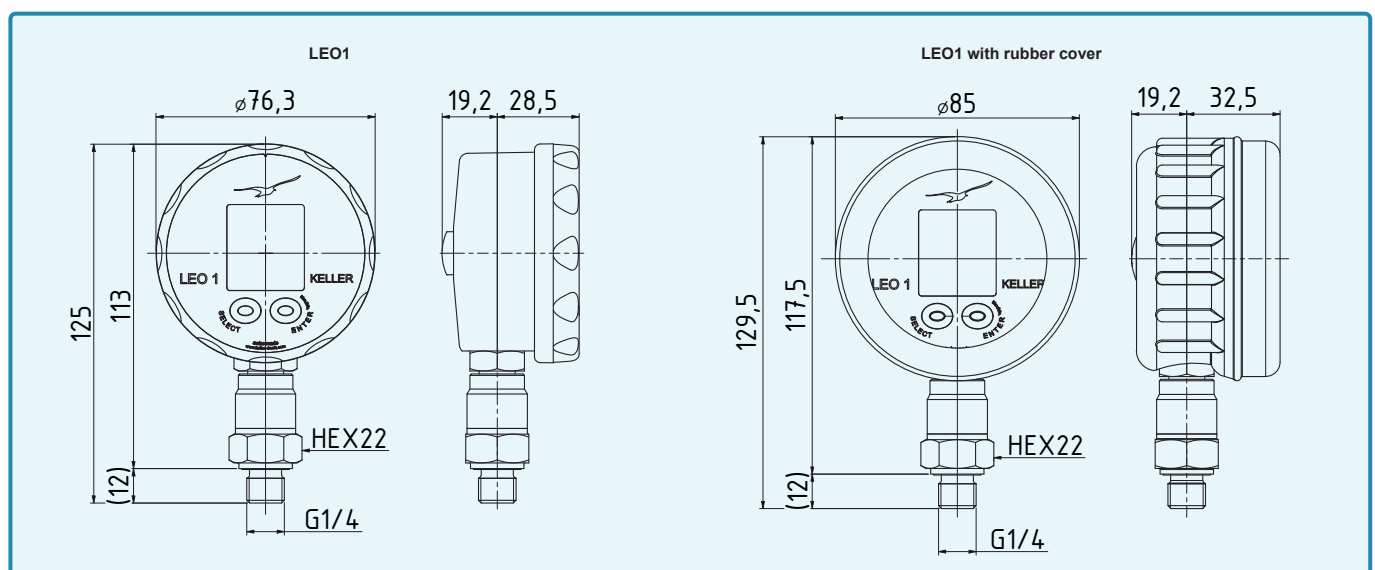
$\pm 0,1$ %FS

Total error band

$\pm 0,2$ %FS

Pressure ranges

-1...3 bar to 0...1000 bar



LEO1 – Specifications

Standard pressure ranges

Relative pressure PR	Absolute pressure PAA	Absolute pressure PA	Proof pressure	Display resolution
-1...3	0...4		12	0,001
-1...10	0...11		30	0,002
-1...30	0...31		90	0,01
	0...61		180	
	0...101		300	0,02
		0...300	600	0,1
		0...700	1200	0,2
		0...1000	1200	0,2
bar rel.	bar abs.	bar abs.	bar	bar
Reference pressure at atmospheric pressure	Reference pressure at 0 bar abs. (vacuum)	Reference pressure at 1 bar abs.	Relating to reference pressure	

Performance

Accuracy @ RT (20...25 °C)	$\leq \pm 0,1 \text{ \%FS}$	Non-linearity (best fit straight line, BFSL), pressure hysteresis, non-repeatability, zero point deviation and amplification deviation
Total error band (0...50 °C)	$\leq \pm 0,2 \text{ \%FS}$	Maximum deviation within the specified pressure and temperature range.
Compensated temperature range	0...50 °C	
Long term stability	$\pm 0,2 \text{ \%FS}$	Per year under reference conditions, yearly recalibration recommended.
Position dependency	$\leq \pm 1,5 \text{ mbar}$	Calibrated in vertical installation position with pressure connection facing downwards.
Pressure range reserve	$\geq \pm 10 \text{ \%}$	Valid measured values outside the pressure range, no overflow/underflow.

Electrical data

Battery	3V, type CR2430	Only CR2430 from Renata permitted for hazardous application areas (LEO1-EI).
Battery life	Up to 1000 hours	Continuous use, mano mode.
	Up to 150 hours	Continuous use, peak mode.

Electromagnetic compatibility

CE-conformity as per 2014/30/EU (EMC)	EN IEC 61326-1 / EN IEC 61326-2-3 / EN IEC 61000-6-1 / EN IEC 61000-6-2 / EN IEC 61000-6-3 / EN IEC 61000-6-4
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LEO1 – Specifications

LC display

Dimensions/appearance	Width x height: 27,8 mm x 30 mm (see dimensions and variants)
Number of digits on LC display	2 rows with 4 1/2 digits each
Display mode	Pressure + min./max.
Display interval	2/s
Measuring rate (mano mode)	2/s
Measuring rate (peak mode)	≥ 1'000/s
Configurable pressure units	bar, mbar, hPa, kPa, MPa, PSI, kp/cm ²

Mechanical data

Materials in contact with media

Pressure connection	Stainless steel AISI 316L	≤ 400 bar
	Stainless steel AISI 318LN, 1.4462	> 400 bar
Pressure transducer diaphragm	Stainless steel AISI 316L	
Pressure transducer seal (internal)	None	
Pressure connection seal (external)	FKM (75 Shore, -20...200 °C)	Others on request

Other materials

Display housing	Faradex AS-1003
Front glass	LEXAN® 163R
Pressure transducer oil filling	Silicone oil

Further details

Pressure connection	G1/4 male	See dimensions and variants
	1/4 NPT male	
Diameter x height x depth	76 mm x 125 mm x 52 mm	Without rubber cover
	85 mm x 130 mm x 57 mm	With rubber cover
Weight	approx. 220 g	Without rubber cover

Environmental conditions

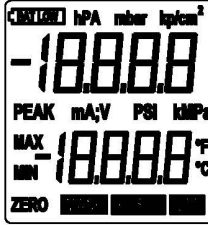
Medium temperature range	-40...85 °C	Icing not permitted
Ambient temperature range	-10...60 °C	
Storage temperature range	-20...70 °C	
Protection	IP65	
Load cycles @ RT (20...25 °C)	> 10 million pressure cycles	0...100 %FS
Note	Readability of the LC display is guaranteed between 10 °C and 50 °C. Outside this range it may be limited.	

Explosion protection LEO1-Ei

Intrinsically safe version LEO1-Ei in accordance with 2014/34/EU (ATEX) and IECEx	LCIE 01 ATEX 6001 X IECEx LCIE 18.0035 X Zone 0: Ex II 1G Ex ia IIC T5 Ga	The intrinsically safe version may only be operated using the CR2430 battery from RENATA. Max. permitted ambient temperature range -10...80 °C.
Note	The conditions for safe use can be found in the operating instructions.	

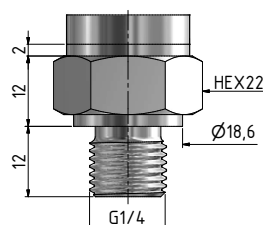
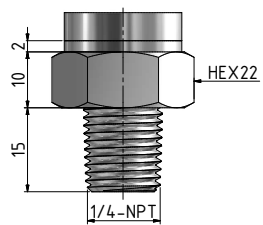
LEO1 – Dimensions and variants

LC display

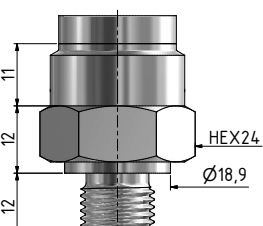
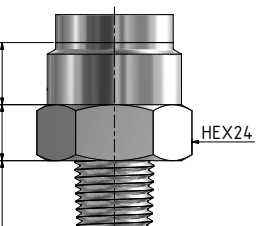
Front cover	Content	Dimensions
		Width × height: 27,8 mm × 30,0 mm Digit size: top: 8 mm × 3,6 mm bottom: 7 mm × 3,2 mm

Available pressure connections

For pressure range ≤ 400 bar

G1/4	1/4-18NPT
	
DIN EN ISO 1179-2	ASME/ANSI B 120.1

For pressure range > 400 bar

G1/4	1/4-18NPT
	
DIN EN ISO 1179-2	ASME/ANSI B 120.1

Customised configurations on request

- Other compensated pressure ranges
- Other compensated temperature ranges
- Other pressure connections
- Parts that come into contact with media made from Hastelloy C-276, Inconel 718 or titanium
- Customer-specific front covers
- Customer-specific firmware (e.g. application-specific calculations or leak measurement)
- Other pressure units can be configured ex works

LEO1 – Scope of delivery and accessories

Scope of delivery

Plastic case	CR2430 Battery Renata	Operating instructions D/E/F
		

Accessories

Rubber cover	Calibration certificate with 5 measuring points	Calibration certificate with 11 measuring points	Calibration certificate	Carry case
				
For additional protection in harsh environments.	Measurement deviation at room temperature. Issued by KELLER Pressure.	Measurement deviation at room temperature with hysteresis. Issued by KELLER Pressure.	Issued by the external calibration laboratory of the German accreditation body DAkkS or the Swiss accreditation body SAS.	With belt loop