



LEO5

High-resolution digital manometer

Features

- Insulated piezoresistive pressure sensor encapsulated in an oil-filled metal housing
- Robust, watertight stainless steel housing with safety glass front
- Large, backlit LC display
- Integrated rechargeable battery (USB chargeable)
- License-free KELLER software available to download

Functions

- High-resolution pressure measurements
- Pressure peak detection with 5 kHz sampling frequency
- Data logger
- Operated via capacitive touch keys
- Bar graph display
- Temperature display
- Min/max display

Typical Applications

- Pressure testing
- Calibration
- Laboratory use
- Industrial applications



Accuracy

± 0,05 %FS

Total Error Band

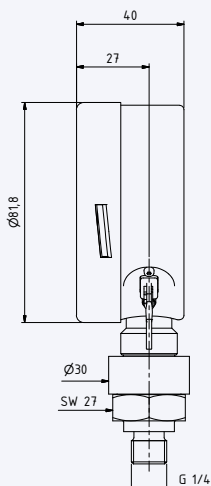
± 0,1 %FS

Pressure Ranges

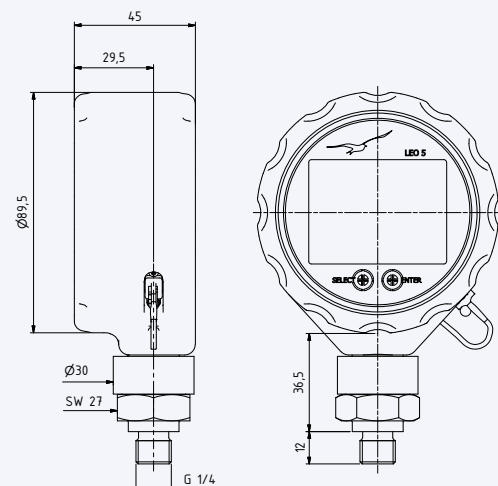
-1...3 bar to 0...1000 bar



LEO5 manometer



LEO5 with rubber cover





LEO5 – Specifications

Standard Pressure Ranges

| | | | | | | | | | | | | | | |
|------------------------|--------|--------|--------|---------|---------|---------|--------|---------|---------|---------|---------|---------|----------|----------|
| Gauge pressure, PR | -1...1 | -1...3 | -1...6 | -1...10 | -1...16 | -1...30 | | | | | | | | bar rel. |
| Absolute pressure, PAA | 0...2 | 0...4 | 0...7 | 0...11 | 0...17 | 0...31 | 0...61 | 0...101 | 0...161 | | | | | bar abs. |
| Absolute pressure, PA | | | | | | | | | | 0...300 | 0...400 | 0...700 | 0...1000 | bar |
| Overload resistance | 8 | 8 | 20 | 20 | 40 | 60 | 200 | 200 | 300 | 600 | 800 | 1100 | 1100 | bar |
| Display resolution | 0,0001 | 0,0001 | 0,001 | 0,001 | 0,001 | 0,001 | 0,001 | 0,01 | 0,01 | 0,01 | 0,02 | 0,05 | 0,1 | bar |

| | | | |
|-----|-----|-------------------|------------------------------|
| Key | PR | Gauge pressure | Zero at atmospheric pressure |
| | PAA | Absolute pressure | Zero at 0 bar abs. (vacuum) |
| | PA | Absolute pressure | Zero at 1 bar abs. |

Performance

| | | |
|-------------------------------------|---------------------|--|
| Accuracy @ RT (20...25 °C) | $\leq \pm 0,05$ %FS | Nonlinearity (BFSL), pressure hysteresis, non-repeatability, zero point, amplification |
| Total error band (0...50 °C) | $\leq \pm 0,1$ %FS | Max. deviation within the specified pressure and temperature range |
| Long-term stability | $\leq \pm 0,1$ %FS | Per year under reference conditions, yearly recalibration recommended |
| Degree of dependency on location | $\leq \pm 1,5$ mbar | Calibrated in vertical installation position with pressure connection facing downwards |
| Accuracy of temperature measurement | ± 1 °C typ. | |
| Pressure range reserve | ± 10 % | |
| Vacuum endurance | $\leq 0,2$ bar abs. | Of operation $\leq 0,2$ bar abs. upon request |

Temperature Ranges

| | |
|-------------------------------|-------------|
| Compensated temperature range | 0...50 °C |
| Media temperature | -10...60 °C |
| Ambient temperature | 0...50 °C |
| Storage temperature | -20...70 °C |

Electrical Data

| | |
|---------------------------------------|---|
| Rechargeable battery | Lithium-ion 4,2 V / 2,3 Ah |
| Battery life (standard) | Up to 2000 hours of continuous operation |
| Battery life (peak mode) | Up to 160 hours of continuous operation |
| Battery charging cycles | > 300 |
| GND case insulation | > 10 MΩ @ 300 VDC |
| External interface | USB (KELLER protocol) |
| Interface measuring rate | 2 measurements per second |
| Electrical connection | Mini USB-B |
| CE conformity as per 2014/30/EU (EMC) | EN 61000-6-1 to -6-4, EN 61326-1 / EN 61326-2-3 |



LEO5 – Specifications

Electrical Data

Data logger

| | |
|-----------------|--|
| Logger function | Records pressure, temperature and measuring time |
| Data storage | ≥ 56 000 measured values |
| Recording modes | Interval, event-controlled |
| Measuring rate | ≥ 1 second, can be configured in 1-second increments |

Display

| | |
|--------------------------------|---|
| Dimensions/appearance | Width × height: 51,3 mm × 38,8 mm, also refer to Dimensions and options |
| Number of digits on LC display | 2 rows with 5 digits each |
| Display mode | Pressure + min/max or pressure + temperature, additional bar graph |
| Measuring rate (standard) | 2 measurements per second |
| Measuring rate (peak mode) | 5 kHz (reduced resolution and accuracy) |
| Configurable units of pressure | [bar], [mbar], [Pa], [hPa], [kPa], [MPa], [PSI], [mH ₂ O], [cmH ₂ O], [inH ₂ O], [ftH ₂ O], [mmHg], [inHg], [kp/cm ²] |
| Additional units of pressure | 5 user-defined units can be configured |

Mechanical Data

Materials in contact with media

| | |
|--|---------------------------|
| Pressure connection | Stainless steel AISI 316L |
| Pressure transducer separating diaphragm | Stainless steel AISI 316L |
| Pressure transducer seal (internal) | FKM (Viton® type A) |
| Pressure connection seal (external) | FKM (Viton® type A) |

Other materials

| | |
|---------------------------------|--------------------------|
| Display housing | Stainless steel AISI 304 |
| Oil filling pressure transducer | Silicone oil |

Further details

| | | |
|---------------------------|--------------------------------|--|
| Pressure connection | G1/4 | Other options see available pressure connections |
| Diameter × height × depth | Approx. 82 mm × 135 mm × 40 mm | Without rubber cover |
| | Approx. 90 mm × 139 mm × 45 mm | With rubber cover |
| Weight | Approx. 430 g | |
| Protection | IP66 | |



LEO5 – Dimensions and Options

LC Display

| Front cover | Content | Dimensions |
|-------------|---------|--|
| | | Width x height: 51,3 mm x 38,8 mm Digit height: top: 15 mm x 7 mm bottom: 10,5 mm x 4,5 mm |

External Connection

| Placement | Mini USB-B connection |
|-----------|-----------------------|
| | |

Available Pressure Connections

| G1/4 (standard) | G1/2 | 1/4 NPT | 1/2 NPT | G1/2 EN 837 |
|-----------------|------------|-------------|-----------------------|-------------|
| | | | | |
| G1/2 flush | G3/4 flush | 7/16-20 UNF | Clamp DIN 32676 flush | G1/4 EN 837 |
| | | | | |

Other pressure connections available upon request.

Optional Advanced Versions

| Standard | Detached sensors |
|----------|------------------|
| | |

Other Customer-specific Options

- Evaluation on other pressure areas
- Evaluation on other temperature ranges
- Parts that come into contact with media made from Hastelloy, Inconel or titanium
- Customer-specific front covers
- Customer-specific firmware with e.g. application-specific calculations
- Other sealing materials for pressure transducers
- Other oil fillings for pressure transducers



LEO5 – Software, Scope of Delivery and Accessories

Interface

The LEO5 manometer has a USB interface. Details of the communication protocols can be found at www.keller-druck.com. Documentation, a Dynamic Link Library (DLL) and various programming examples are available to integrate the communication protocol into your own software.

KOLIBRI Desktop

With the «KOLIBRI Desktop» Windows software, data recorded using KELLER instruments with a recording function can be read and visualised. This data can be exported in CSV, JSON, Excel or Word format, as an image, or in other formats for further processing or documentation. The data loggers are easy to configure, thanks to the intuitive software interface. And, the various recording functions provide an optimum level of adaptability to suit the measuring task at hand. Additionally, installation site information and other parameters necessary for water level calculations can be saved directly in the measuring device.

KOLIBRI Desktop is license-free and compatible with all products of the KOLIBRI Suite

Configuration options

- Pressure and temperature channels, selectable.
- Adjustable measurement interval (1s...99 days)
- Averaging with selectable number of measurements
- Recording modes
 - continuous interval measurement
 - event-controlled recording
 - recording starts when value is exceeded
 - recording starts when value is undercut
 - recording starts when value changes
 - combination of continuous and event-controlled recording is possible
- Adjustment of pressure zero point
- Start measurements immediately or at a set time
- Water level calculation
- Data storage: linear or ring-type memory



«CCS30» Software

Recording measured values

- Live visualisation
- Adjustable measuring and storage interval
- Export function

Configuration

- Call up of information (pressure and temperature range, firmware version, serial number etc.)

«ManoConfig» Software

The ManoConfig program is compatible with various types of KELLER manometers and allows end customers to configure the devices.





Range of functions

- Display of online measured values
- Configuring the wait period before automatic shutdown
- Selecting standard pressure units
- Activating/deactivating pressure units
- Programming user-defined pressure units
- Restoring to factory settings
- Calibrating the manometer


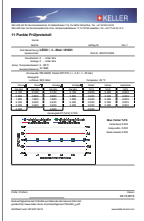



LEO5 – Software, Scope of Delivery and Accessories

Scope of Delivery

| Plastic case | USB cable | KELLER 5-point report | Operating instructions D/E/F |
|---|---|---|---|
|  |  |  |  |

Accessories

| Rubber cover | KELLER 11-point report | Calibration certificate |
|--|--|--|
|  |  |  |
| For additional protection in harsh environments | Measurement deviation at room temperature with hysteresis | Issued by the external calibration laboratory of the German accreditation body DAkkS or the Swiss accreditation body SAS |