



TEST EQUIPMENT RENTAL SERVICES

When you rent Test Equipment from TDC, we want you to know that you will have a dedicated personal service from start to finish. Our Customer Service team is here to support you throughout your rental period.

TDC are independent specialists promoting all high quality manufacturers and instrument types. Equipment can be delivered Next Day or Same Day to suit your requirements.

When you are finished, simply contact us to arrange your equipment collection or alternatively you can despatch it back to us – we make it easy.

RENTING FROM TDC JUST MAKES SENSE

By using TDC Test Equipment Rental Solutions, you benefit from our extensive rental inventory that is second to none. We constantly refresh our equipment range with branded equipment manufacturers such as Megger, FLUKE, Chauvin Arnoux, OMICRON, FLIR, b2 HVA, Agilent Technologies, Dranetz BMI, Fujikura, JDSU, Ametek Jofra, GE DRUCK, RAE Systems, TSI Airflow, Rohde & Schwarz, NORBAR, PANAMETRICS, Tektronix and many more.

You can utilise our rental equipment to suit your own requirements, from one week to as many months as you need. You only pay for what you use down to the day. Renting with TDC is straightforward and easy. Our expert Sales and Applications Engineers will find the best solution to suit your application.

Delivery & Collection is arranged by us - we make it hassle free and easy.

TDC 6 POINT RENTAL GUARANTEE - OUR REPUTATION MATTERS



1 SAME DAY DISPATCH

Many of our customers operate to very strict deadlines. Providing the order is placed and confirmed before 3pm, your equipment will be despatched the same day.



2 QUALITY

All Equipment is checked prior to dispatch to ensure it is servicable and in safe working order. Certification checks are standard.



3 SUPPORT

We will provide you with enough information to make an informed choice of the correct equipment required for your application.



4 PRICE

We offer a simple price match promise. We'll match any genuine competitor quote.



5 CUSTOMER SERVICE

We can promise that throughout your rental period, we will do our utmost to provide you with the best customer service. All information we provide is in good faith and free of charge. We will provide a quote for any consultancy or professional advice that may be required.



6 REPUTATION

We know we are only as good as our last job. We don't just want regular customers - we want to build loyal customers.



For all enquiries, please contact: Gordon Thow (Test Equipment Rental Manager)

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+ KELLER



TEST EQUIPMENT RENTAL SERVICES

LEO Record Gauges

Datasheet/Manual

DIGITAL MANOMETER

WITH RECORD FUNCTION

LEO Record is an autonomous battery powered instrument with digital display designed to record pressure and temperature over long periods. LEO Record Ei is approved per IECEx for use in hazardous areas. Both the piezoresistive LEO Record as well as the capacitive LEO Record (ideal for low pressure ranges) offer the following advantages:

- High measuring accuracy, resolution and robustness
- High data security due to the use of a non-volatile memory
- Display of the actual pressure and the record status
- Recording of the pressure and temperature
- Software Logger 5 (included in delivery) for instrument configuration and analysis of measured data
- Combination of event-controlled recording and interval recording prevents unnecessary data being recorded (i.e. only measuring the pressure changes...)
- Installation data (and comments) of the measuring station can be stored in the instrument
- Pressure connection with G1/4" thread (other threads on demand)

The pressure is measured and displayed once per second (shortest interval). The top display indicates the actual pressure, the bottom display shows the record status.

All LEO Record versions have 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 or unit.

The instruments have the following functions:

ZERO The ZERO-function allows to set any value as a new Zero reference.

UNITS All standard instruments are calibrated in bar. The pressure can be indicated in the following units: bar, mbar/hPa, kPa, MPa, PSI, kp/cm², (m)H₂O

RECORD The record can be started or ended with the operating keys.
The configuration of the record takes place via interface/software.

Optional accessories: - Protective rubber covering
- Carrying bag



LEO RECORD LEO RECORD Ei



LEO Record



LEO Record Ei
with capacitive sensor

SPECIFICATIONS LEO Record (Ei)

| Pressure Ranges ¹ , resolution, overpressure: | Ranges | Resolution | Overpressure |
|--|---|------------|--------------|
| | -1...3 bar | 1 mbar | 10 bar |
| | -1...30 bar | 10 mbar | 60 bar |
| | 0...300 bar | 100 mbar | 400 bar |
| | 0...700 bar | 100 mbar | 700 bar |
| | 0...1000 bar | 100 mbar | 1000 bar |
| Total Error Band (0...50 °C) | 0,1 %FS (Accuracy, incl. temperature error) | | |
| Long Term Stability typ. | 0,1 %FS | | |

SPECIFICATIONS LEO Record (Ei) capacitive

| | Standard FS Pressure Ranges ¹ | | | |
|--|--|------|------|------|
| PR (relative) / PD ² (differential) | 30 | 100 | 300 | mbar |
| Overpressure | 300 | 1000 | 1500 | mbar |
| Negative Overpressure | 30 | 100 | 300 | mbar |
| Total Error Band (10...40 °C) | ± 0,2 %FS | | | |
| Long Term Stability typ. | ± 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

LEO Record Ei

Intrinsically Safe Version, 94/9/CE and IECEx

Classification: Ex II 2 G Ex ia IIC T4 Gb

Certifications File:

PTB 05 ATEX 2012 X and IECEx PTB 13.0028X

The intrinsic safe version of LEO Record incorporates an additional protection board.

Functions, ranges and accuracy are identical to the standard LEO Record 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.



KELLER

Specifications LEO Record (Ei)

| | |
|--|--|
| Storage- / Operating Temperature | -10...60 °C / 0...50 °C |
| Measuring Cycle | Adjustable (shortest interval 1 x per second) |
| Memory | ≈ 57'000 measuring values with time indication @ a measuring cycle of ≤15 s ≈ 28'000 measuring values with time indication @ a measuring cycle of >15 s |
| Supply | 3,6 V Lithium battery, type SL-760 |
| External supply (excl. Ei instruments) | 8...28 VDC |
| Battery Life | up to 2 years @ 1 recording every 10 seconds |
| Pressure Connection | G 1/4" (other threads on demand) |
| Temperature Measurements | Accuracy typ. 0,5 °C |
| Interface | RS485; rear-sided mating plug "Fischer" compatible with PC-converter cable K103-A (RS232) and K104-A(USB) |
| Material in Contact with Media | LEO Record: Stainless steel (AISI 316L), Viton® O-ring LEO Record capacitive: Viton® O-ring, gold-coated ceramic diaphragm |
| Protection | IP 65 |
| Diameter x Height x Depth (approx.) | 76 x 120 x 55 mm (LEO Record) / 76 x 150 x 55 mm (LEO Record capacitive) |

LOGGER 5

The Logger 5 software makes it possible to configure and read autonomous KELLER data loggers. This software assists users during measurements in the field, with processing the data and also with forwarding it to partners or end customers.

Measurement data can be displayed in graphic form, exported, compensated for air pressure or converted into different units. The online function displays the current device values.

The software is included in the scope of delivery for the interface converter cables, or it can be downloaded free of charge at www.keller-druck.com.

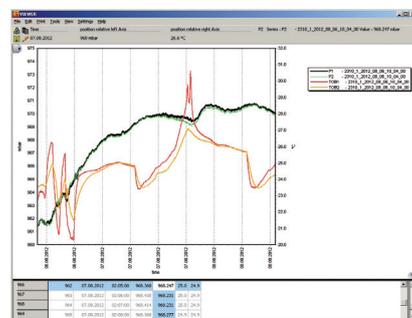
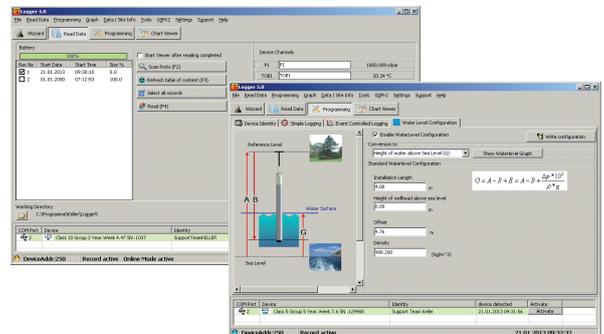
- Supports Windows operating systems

Overview of functions: Logger 5

- 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
- Data storage: linear or ring-type memory
- Battery status display
- Online display of measuring channels
- Management of notifications and images for stations

Processing and forwarding measurement data

- Graphic display of measurement data
- Simple export of measurement data and graphics (supports Microsoft Office and these file formats: CSV-1, CSV-2, XML, Hydras, TNO, Wiski, BNA)
- Generation of measurement reports
- Station information stored in SQ Lite database





LEO 2



DIGITAL MANOMETER WITH MAX.-/MIN.-DISPLAY.

ACCURACY: 0,1 %FS TYP.

LEO 2 has two operating keys. The left key (SELECT) serves to select the functions and the pressure units. The right key (ENTER) activates the selected function or pressure unit. The right key is also used to switch between the Max.- and Min.-value.

Turn-on: Pressing the SELECT key turns the instrument on. The instrument subsequently displays the software version (year/week), the full-scale pressure range, the actual pressure (top display) and the last measured Max.-value (bottom display).

The instrument has the following functions:

RESET: Max.-/Min.-value are set to the actual pressure

OFF: Turns off the instrument

MANO: Releases the following functions:

ZERO SET: Sets a new Zero reference

ZERO rES: Sets the Zero to factory setting

CONT on: Deactivates the automatic turn-off function

CONT off: Activates the automatic turn-off function (the instrument turns off 15 minutes after the last key function)

followed by the unit selection: **bar, mbar/hPa, kPa, MPa, PSI, kp/cm²**

Example: Setting a new pressure unit (mbar/hPa):

- ➡ Turn on the instrument by shortly pressing the SELECT-key.
- ➡ Wait for the measuring mode of the instrument (approx. 3 seconds).
- ➡ Press the SELECT-key 3 times: **MANO** appears.
- ➡ Press ENTER: **ZERO SET** appears.
- ➡ Press SELECT: **ZERO rES** appears.
- ➡ Press SELECT: **CONT on** or **CONT off** appears.
- ➡ Press SELECT: **BAR** appears.
- ➡ Press SELECT: **mbar/hPa** appears.
- ➡ Press ENTER: The new pressure unit is set. The instrument returns to the measuring mode.

Display of the minimum pressure value

When in the measuring mode (Display: Actual Pressure and Max.-value), you may display the Min.-value for 5 seconds by shortly pressing the ENTER-key.

Notes

- 1) The functions and units can also be called up by keeping the SELECT-key depressed. Releasing the key enables the displayed function or unit to be activated with the ENTER-key.
- 2) If the selected function or unit is not activated within 5 seconds with the ENTER-key, LEO 2 returns to the measuring mode without changing any settings.
- 3) Turning LEO 2 on and off does not influence any of the previous settings.
- 4) If the **CONT on** function is activated, it is indicated with a flashing sign on the display.
- 5) If a pressure can not be represented on the display, **OFL** (overflow) or **UFL** (underflow) appears on the display.
- 6) If the actual pressure goes beyond the measuring range, the last valid pressure value starts flashing on the display.

Installation

LEO 2 has 7/16" UNF male thread and is delivered complete with an O-ring seal Swivel fitting which allows LEO 2 to be rotated through 360°.

Only minimal tightness is needed to seal up to 700 bar. Process pressure connection is G 1/4" male.

Swivel



Swivel Fitting
G1/4"

Battery Change / Battery Life

When the battery starts weakening, a low battery warning (BAT LOW) will appear in the upper left corner of the display.

Battery change: Open the battery compartment and change the battery (type CR 2430). Make sure that the O-ring remains embedded in the cover.

The battery life is 1000 hours in normal measuring mode.

Ranges / Calibration

The factory setting of the Zero for the ranges -1...3 bar or -1...30 bar is at 0 bar absolute. For sealed gauge pressure measurements, activate "ZERO SEt" at ambient pressure.

Instruments with ranges > 30 bar have a factory setting of the zero at ambient pressure.

Declaration of Conformity

The Declaration of Conformity to this product can be downloaded under www.keller-druck.com



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To differentiate our organisation in order to achieve continuous, sustainable growth, TDC endeavours to fully understand and exceed the expectations of our customers, and to work proactively to deliver **Engineering Excellence**.



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