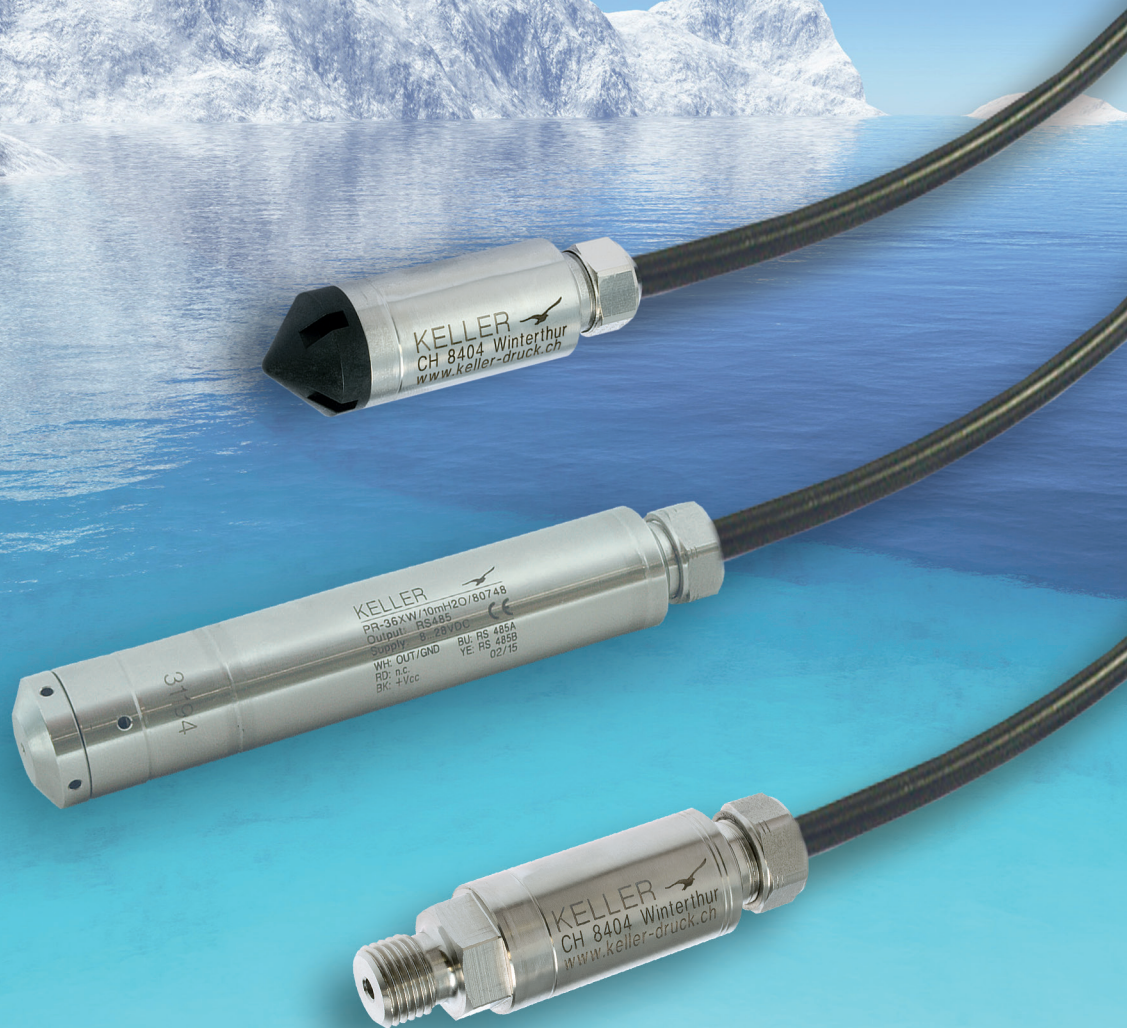


# Hydrostatic Pressure Measurement for Levels and Fill Levels



## Hydrostatic fill level measurement

Hydrostatic pressure is proportional to the height of a column of fluid. The pressure generated depends on the density of the fluid and the gravitational pull acting on it. Level probes measure this pressure, with the ambient pressure also factored into their measurement method or design. Pressure measurements require high long-term stability in order to meet the standard required of a static measurement.

## Benefits of piezoresistive technology

KELLER is a pioneer in piezoresistive technology and has perfected the design of isolated silicon cells. A sturdy metallic casing obviates the need for inner seals. The monocrystalline sensor element is ideal for taking static pressure measurements and is hysteresis-free. Piezoresistive technology also permits extremely compact designs.

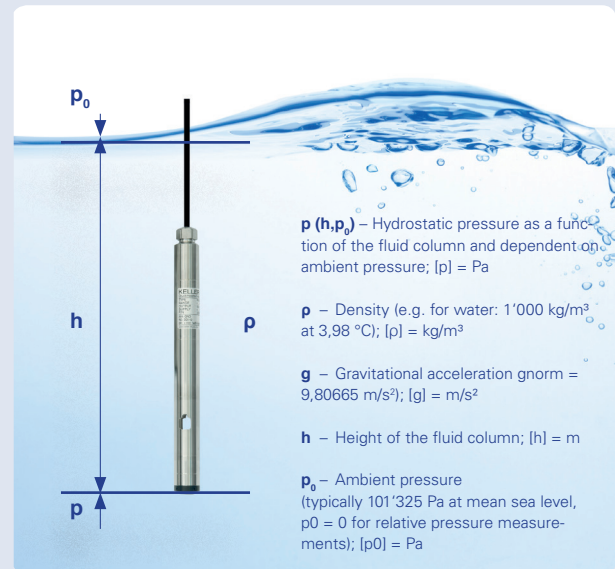
## Characteristics of the pressure gauges

- High precision and long-term stability, no pressure hysteresis
- Digital interface for reading off temperature measurements (useful in calculating density)
- Well protected against environmental influences
- Overvoltage and reverse polarity protection
- Sturdy, rust-free housing
- Small diameters to fit dip pipes upwards of 16 mm
- Large selection of pressure ranges
- Various materials and cables available to ensure media compatibility

## Hydrostatic pressure factoring in ambient pressure

$$p(h, p_0) = \rho \times g \times h + p_0$$

The formula can be applied to open bodies of water and fluids at rest (static) in containers. A differential pressure measurement to factor in  $p_0$  (lid pressure) is used for sealed containers. To factor ambient pressure into open scenarios, measurements are taken using relative pressure probes or AA (absolute-absolute) technology.



## Level probes



### Analog

#### 26 Y / 26 C series

- Measuring ranges from 0...1 to 0...300 mH<sub>2</sub>O
- Various outputs: current / voltage also ratiometric
- Accuracy: 0,25 %FS

- Compact, sturdy design made from stainless steel, Hastelloy® or titanium
- Protective cap or thread
- Excellent value for money

### Digital and analog

#### 36 X(ii) W / 36 XS / 46 X\* series

- Measuring ranges from 0...0,01 to 0...300 mH<sub>2</sub>O
- RS485 Modbus RTU interface can be combined with SDI-12 or current/voltage output
- Accuracy: < 0,02 %FS

- Integrated temperature measurement function
- High long-term stability
- Diameters upwards of 16 mm
- Can be calibrated
- Freely scalable analog output via RS485 interface

\* Capacitive measuring cell



## Autonomous data loggers



Level probes with integrated data loggers  
DCX-16 / DCX-18 ECO / DCX-22 / DCX-22 AA

- ◆ Measuring ranges from 0...1 to 0...300 mH<sub>2</sub>O
- ◆ Accuracy: 0,02 %FS

- ◆ Ten-year battery life
- ◆ AA technology with integrated barometer
- ◆ Free software
- ◆ 16 mm, 18 mm and 22 mm diameters available
- ◆ Can be powered by (rechargeable) battery or external supply
- ◆ Integrated temperature measurement function



Data loggers with remote transmission  
ARC-1

- ◆ GSM module with multi-channel input (up to five level probes)
- ◆ Data transfer via FTP, e-mail or text message

- ◆ Various sensor interfaces
- ◆ Autonomous operation; ten-year battery life
- ◆ Data management using KELLER software
- ◆ Suitable for fitting inside a 2" dip pipe
- ◆ Waterproof and submersible
- ◆ Integrated barometer

## Multi-parameter probe



DCX 22 CTD / 36 Xi W CTD series

- ◆ Measures pressure, temperature and conductivity
- ◆ Conductivity measuring range 0...200 mS/cm
- ◆ No maintenance required

## Special designs



36 X KY / 33 X / DCX-25 PVDF series

- ◆ Dirt-repellent Kynar® diaphragm
- ◆ SubConn® connector
- ◆ PVDF housing for use in aggressive media

## Options and approvals

- ◆ Customised versions available even in small quantities
- ◆ All pressure sensors temperature-compensated
- ◆ PT1000 variant accurate down to 0,1 K
- ◆ Various cable materials possible, e.g. PE/TPE/FEP (Teflon®)
- ◆ Customisable measuring range and cable lengths
- ◆ Lightning protection
- ◆ Steel, titanium or Hastelloy® used for all metallic parts
- ◆ Low-power design (for battery-operated applications)
- ◆ RS485 Modbus RTU and/or SDI-12 interface

ATEX- and IECEx-approved



Approval for drinking water



ISO-certified



# Welcome to KELLER AG für Druckmesstechnik. Your Swiss Pressure Sensing Specialist.

KELLER AG für Druckmesstechnik, which has its headquarters in Winterthur, Switzerland, is Europe's leading manufacturer of media isolated pressure transducers and transmitters.

The entire production process, from the manufacturing of the individual components and the calibration of the sensors through to the final quality control of the finished products, takes place at the company's headquarters in Winterthur. This means that all of KELLER AG's products are officially "Made in Switzerland". The application areas for KELLER's pressure transducers are just as broad as KELLER's product range.

KELLER AG für Druckmesstechnik and KELLER Gesellschaft für Druckmesstechnik mbH Jestetten have ISO 9001 certification.

**Founder / Founded in**  
Hannes W. Keller, dipl. Phys. ETH / 1974

**Workforce**  
450 employees

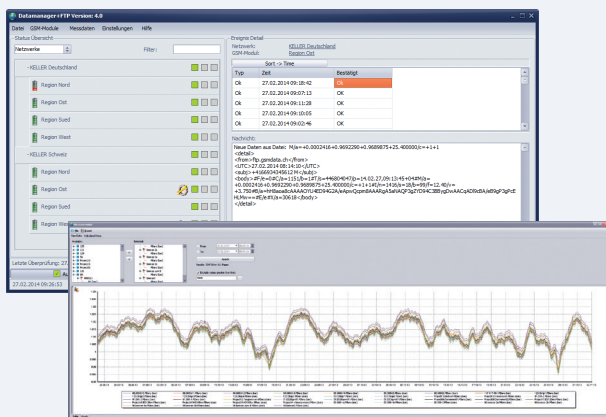
**Turnover**  
CHF 80 million

**Warehouse / Shipping**  
Winterthur (CH), Head Office and Production  
Jestetten (D), EU Logistics Centre

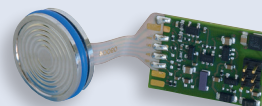
Subsidiaries and sales partners all around the world.

## KELLER Software

KELLER AG für Druckmesstechnik has its own software department. Its comprehensive range of applications is always included with the relevant products. No licence fees are charged.



## OEM – tailor-made products



KELLER AG is well-known for its pressure transmitters, digital manometers and level probes – but it also has a strong reputation as an original equipment manufacturer. OEM products such as pressure transducers with compensation electronics and customised solutions for every stage of development are used in a wide range of devices developed by our customers.

For example, the Series PRD-33 X was developed for applications that require a high degree of accuracy together with high overload resistance in the low differential pressure range. It can be used to measure the fill level in closed tank systems, while also supplying the absolute line pressure for regulating internal pressure up to 40 bar with the utmost precision.



**KELLER AG für Druckmesstechnik**  
St. Gallerstrasse 119  
8404 Winterthur  
Switzerland

+41 52 235 25 25



**KELLER Gesellschaft für Druckmesstechnik mbH**  
Schwarzwaldstr. 17  
79798 Jestetten  
Germany

+49 7745 9214 0

info@keller-druck.com  
www.keller-druck.com

Your contact at KELLER:

