

Series 26Xi

Highly accurate piezoresistive level probe with SDI-12 interface

Features

- SDI-12 interface
- Protocol V1.3 for process values and configuration
- Energy-efficient, ideal for battery operated systems
- Excellent long-term stability
- For many years of maintenance-free operation

Technology

- Insulated and encapsulated piezoresistive pressure sensor
- High-quality pressure transducer and tried-and-tested mathematical compensation
- Robust stainless-steel housing

Typical applications

- Hydrostatic pressure measurement
- Level measurement: groundwater, surface water
- Fill level measurement: water tanks, fuel tanks



Accuracy

± 0,1 %FS

Total error band

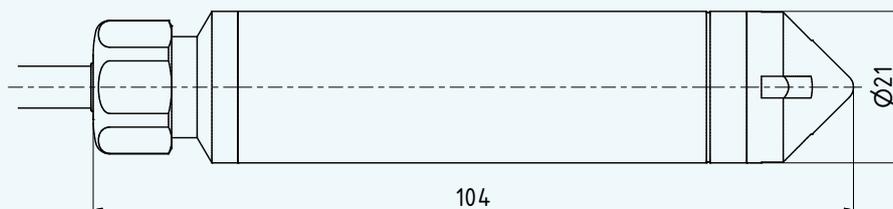
± 0,25 %FS @ 0...50 °C

Pressure ranges

0...0,3 to 0...10 bar

SDI-12

Series 26Xi



Series 26Xi – Specification

Standard pressure ranges

| Water column approx. | Relative pressure PR | Absolute pressure PAA | Proof pressure |
|----------------------|-----------------------------------------------------------------------------------------------------------------------------|-------------------------------------------|-----------------------------|
| 0...3 | 0...0,3 | | 3 |
| 0...10 | 0...1 | 0,8...2 | |
| 0...30 | 0...3 | 0,8...4 | 9 |
| 0...100 | 0...10 | 0,8...11 | 30 |
| mH2O | bar rel. | bar abs. | bar |
| | Reference pressure at atmospheric pressure | Reference pressure at 0 bar abs. (vacuum) | Based on reference pressure |
| Note | PAA 0,8...2 bar: For installations at altitudes greater than 2000 m above sea level, special measuring ranges are required. | | |

Performance

Pressure

| | | |
|-------------------------------|--------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Accuracy @ RT (20...25 °C) | $\leq \pm 0,1$ %FS | Non-linearity (best fit straight line, BFSL), pressure hysteresis, non-repeatability, zero point deviation and amplification deviation. |
| Total error band (0...50 °C) | $\leq \pm 0,25$ %FS | Max. Deviation within the compensated pressure and temperature range. Experience shows that, outside the compensated temperature range, the total error band in the ambient temperature range is expanded by 0,1 %FS. |
| Compensated temperature range | 0...50 °C | Other temperature ranges within -20...85 °C are possible. |
| Long-term stability | $\leq \pm 0,15$ %FS | Per year under reference conditions, annual recalibration recommended. |
| Position dependency | $\leq \pm 1,5$ mbar | Calibrated in vertical installation position with pressure connection facing downwards. |
| Resolution | 0,002 %FS | |
| Signal stability | 0,01 %FS | Noise-free |
| Pressure range reserve | $\geq \pm 10$ % | |
| Note | For pressure ranges < 1 bar, all data apply with reference to a full-range signal (FS) of 1 bar. | |

Temperature

| | | |
|------------|------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------|
| Accuracy | $\leq \pm 1,5$ °C | The temperature is measured on the pressure sensor (silicon chip) that sits behind the metallic separating diaphragm. |
| Resolution | $\leq 0,01$ °C | |
| Note | The data applies within the compensated temperature range. | |

Series 26Xi – Specification

Electrical data

| | |
|-------------------------------------------|-------------------------------------------------|
| Connectivity | digital |
| Digital interface | SDI-12 |
| Voltage supply | 6...32 VDC |
| Power consumption (without communication) | < 0,1 mA (sleep mode) < 5,5 mA (active mode) |
| Interface voltage insulation | ± 24 VDC |

| | |
|---------------------------------------------|-------------------|
| Start-up time (power supply ON) | < 1 s |
| Overvoltage and reverse polarity protection | ± 32 VDC |
| GND case insulation | > 10 MΩ @ 300 VDC |

Digital interface

| | | |
|-------------------------|----------------------------------|-----------------------------------------------------------------------------------------------------|
| Type | SDI-12 | Half-duplex |
| Communication protocols | SDI-12 V1.3 | |
| Identification | Pressure mode + type | Standard settings: bar, °C, bus address 0 |
| Units of pressure | bar, mbar, mH2O, psi, ftWC, inWC | |
| Units of temperature | °C, °F, K | Other default settings available on request. Software can be reconfigured by the customer later. |
| Data type | ASCII | |
| Baud rates | 1,200 bit/s | |
| Cable length | Up to 250 m | The maximum cable length depends on the number of bus subscribers. |

Electrical connection

| | | |
|------------------------------|-------------------------------------|----------------------|
| Cable for water applications | PR: polyethylene (PE) ø 5,8 mm | Integrated capillary |
| | PAA: polyolefin (PE-based) ø 5,8 mm | |
| Cable for fuel applications | PR: TPE-E ø 6,1 mm | Integrated capillary |
| | PAA: TPE-E ø 4,7 mm | |
| Standard cable lengths | 5 m, 10 m, 15 m, 25 m, 40 m, 100 m | Others on request |

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 | |
| Lightning protection (advanced surge protection) in accordance with EN 61000-4-5 | Line-line: 10 kA @ 8/20 µs | |
| | Line-CASE: 2 kA @ 8/20 µs | |

Series 26Xi – Specification

Mechanical data

Materials in contact with media

| | | |
|------------------------------------------|----------------------------|-------------------|
| Housing and optional pressure connection | Stainless steel AISI 316L | Others on request |
| Pressure transducer diaphragm | Stainless steel AISI 316L | |
| Pressure transducer seal (internal) | FKM | |
| Cable gland seal (internal) | FKM | |
| End cap | POM | |
| Cable sheath | PR: polyethylene (PE) | Medium: water |
| | PAA: polyolefin (PE-based) | |
| | PR/PAA: TPE-E | Medium: fuels |

Other materials

| | | |
|---------------------------------|--------------|-----------------------------|
| Pressure transducer oil filling | Silicone oil | Others available on request |
|---------------------------------|--------------|-----------------------------|

Further details

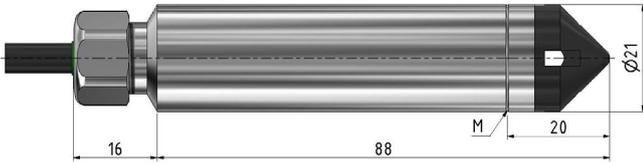
| | | |
|--------------------------|-------------------------------|----------------------------|
| Pressure connection | None (end cap), G1/4 optional | See Dimensions and options |
| Diameter × length | ø 21 mm × approx. 104 mm | |
| Weight (excluding cable) | approx. 100 g | |

Environmental conditions

| | | | |
|---------------------------|-----------------------------|----------------|---------------------------------------------------------------|
| Medium temperature range | -20...85 °C | | Icing not permitted |
| Ambient temperature range | -20...85 °C | | |
| Storage temperature range | -20...85 °C | | |
| Protection | IP68 | Cable gland | For relative pressure, use a cable with integrated capillary. |
| Vibration resistance | 10 g, 10...2000 Hz, ± 10 mm | IEC 60068-2-6 | |
| Shock resistance | 50 g, 11 ms | IEC 60068-2-27 | |

Series 26Xi – Dimensions and options

Electrical connections



M: marking of diaphragm position

| Cable gland | |
|-------------|----------------|
| Cable | SDI-12 |
| | WH GND |
| | RD SDI-12 |
| | BK +Vs |
| | BU (RS485A) |
| | YE (RS485B) |
| | Shield on CASE |

The RS485 interface has not been activated and is to be understood as a factory-installed interface.

Available pressure connections

| Standard | Optional |
|------------------------|------------------|
| End cap | G1/4 |
| | |
| Restored diaphragm (M) | DIN EN ISO 228-1 |

Customer-specific options

- Other compensated pressure ranges
- Other temperature ranges between -20...85 °C
- Other cable sheath materials
- Metal parts that come into contact with media made from Hastelloy C-276 or titanium
- Modifications to customer-specific applications

Examples of similar products

- Series 26X: Highly accurate level probe with RS485 and analog interface
- Series 36XW: Level probe with maximum performance and RS485 and analogue interface
- Series 36XiW: Level probe with excellent performance and SDI-12 interface
- Series 36XW-CTD: Multi-parameter probe with excellent performance and RS485 interface
- Series 36XiW-CTD: Multi-parameter probe with excellent performance and SDI-12 interface
- OEM series: Pressure transducers with digital compensation electronics (e.g. series 10LX or 20SX with thread) for integration into own systems

Series 26Xi – Software, scope of delivery and accessories

Interface

SDI-12 is a tried-and-tested standard for connecting data recording units and digital sensors within the context of environmental monitoring. The SDI-12 interface is optimised for use in battery-operated systems with a data recording unit and several sensors on the same bus. The bus protocol is ASCII-based and standardised. Details of the SDI-12 communication protocols can be found at www.keller-druck.com.

The level probe is only active when the data recording unit communicates with it or when it is recording measurements. In all other cases, the level probe remains in standby mode and, at < 0,1 mA, requires very little electricity.

Standard commands:

- Reading measured values with or without checksums
- Changing the sensor address
- Reading identification

Additional commands:

- Setting pressure and temperature units
- Configurable zero point and amplification
- Configurable gravitational constant for increased measurement accuracy
- Programming a user-specific identification
- Configurable continual measurement with adjustable measurement intervals and averaging of up to 8 pressure values

Note: Further details about the interface can be found in the document "SDI-12 A Serial Digital Interface Standard for Microprocessor-Based Sensors" (<https://sdi-12.org/specification>).

Scope of delivery

| KELLER test report | USIT ring |
|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
|  |  |
| Issued by KELLER. | Attached in case of G1/4 pressure connection. |

Accessories

| Calibration certificate |
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|  |
| Issued by an external calibration laboratory accredited by DakkS or SAS. |