Series 36XiW

Piezoresistive level probe with excellent accuracy and an 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

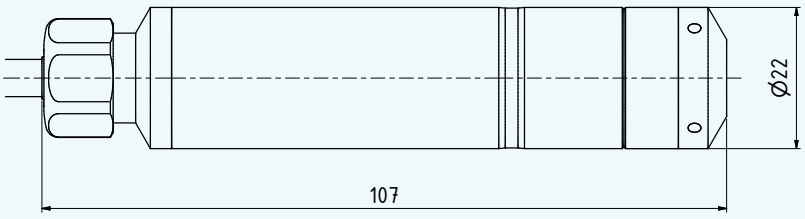
Typical applications

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

Accuracy
± 0,05 %FS
Total error band
± 0,1 %FS @ 0…50 °C
Pressure ranges
0…0,3 to 0…10 bar

SDI-12

Series 36XiW



For pricing or any further information, please contact Omni Instruments Ltd.

Measurement and data acquisition solutions

Contact Details:
Tel: +44 1382 443000
Email: info@omni.uk.com

Mailing Address: Unit 1, 14 Nobel Road, Wester Gourdie Industrial Estate, Dundee, DD2 4UH.

Website: www.omniinstruments.co.uk

Series 36XiW – Specifications

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	9
0…30	0…3	0,8…4	
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)	In relation to 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

Digital non-linearity	≤ ± 0,02 %FS	Best fit straight line (BFSL)
Accuracy @ RT (20…25 °C)	≤ ± 0,05 %FS	Non-linearity (best fit straight line, BFSL), pressure hysteresis, non-repeatability, zero point deviation and amplification deviation.
Total error band (0…50 °C)	≤ ± 0,1 %FS	Maximum deviation within the specified 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 between -20…85 °C are possible as an option.
Long-term stability	typ. ± 0,05 %FS	Per year under reference conditions, annual recalibration recommended.
	max. ± 0,1 %FS	
Position dependency	≤ ± 2 mbar	Calibrated in vertical installation position with pressure connection facing downwards.
Resolution	0,0005 %FS	
Signal stability	0,0025 %FS	Noise-free
Pressure range reserve	≥ ± 10 %	
Note	For pressure ranges < 1 bar, all data applies with reference to a full-range signal (FS) of 1 bar.	

Temperature

Accuracy	≤ ± 1,5 °C	The temperature is measured on the pressure sensor (silicon chip) that sits behind the metallic separating diaphragm.
Optional	≤ ± 0,1 °C	The temperature is also measured by a Pt1000 sensor behind the pressure transducer.
Resolution	≤ 0,01 °C	
Note	The data applies within the compensated temperature range.	

For pricing or any further information, please contact Omni Instruments Ltd.

Measurement and data acquisition solutions

Contact Details:
Tel: +44 1382 443000
Email: info@omni.uk.com

Mailing Address: Unit 1, 14 Nobel Road, Wester Gourdie Industrial Estate, Dundee, DD2 4UH.

Website: www.omniinstruments.co.uk

Series 36XiW – Specifications

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)
Voltage insulation of the interface	± 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 protocol	SDI-12 V1.3	
Identification	Pressure mode + type	Standard settings: bar, °C, bus address 0 Other default settings available on request. Can be reconfigured later by the customer using software.
Pressure units	bar, mbar, mH20, psi, ftWC, inWC	
Units of temperature	°C, °F, K	
Data type	ASCII	
Baud rate	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 (extended surge protection) according to EN 61000-4-5	Standard	Line-line: 10 kA @ 8/20 µs
		Line-CASE: 2 kA @ 8/20 µs

For pricing or any further information, please contact Omni Instruments Ltd.

Measurement and data acquisition solutions

Contact Details:
Tel: +44 1382 443000
Email: info@omni.uk.com

Mailing Address: Unit 1, 14 Nobel Road, Wester Gourdie Industrial Estate, Dundee, DD2 4UH.

Website: www.omniinstruments.co.uk

Series 36XiW – Specifications

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	Others on request
Cable gland seal (internal)	FKM	
End cap	POM	Stainless steel 316L optional
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 on request

Further details

Pressure connection	None (end cap), G1/4 optional	See Dimensions and options
Diameter × length	ø 22 mm × approx. 106 mm	
Weight (excluding cable)	approx. 150 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	

For pricing or any further information, please contact Omni Instruments Ltd.

Measurement and data acquisition solutions

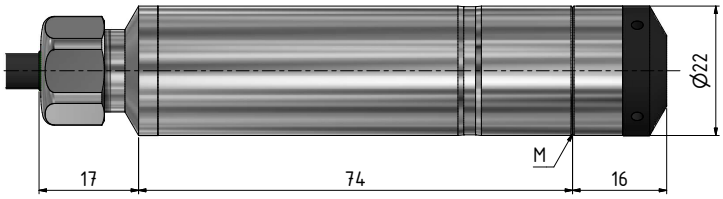
Contact Details:
Tel: +44 1382 443000
Email: info@omni.uk.com

Mailing Address: Unit 1, 14 Nobel Road, Wester Gourdie Industrial Estate, Dundee, DD2 4UH.

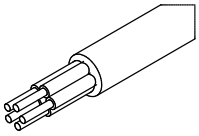
Website: www.omniinstruments.co.uk

Series 36XiW – Dimensions and options

Electrical connections

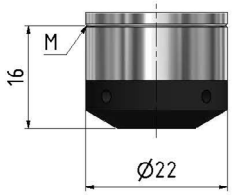
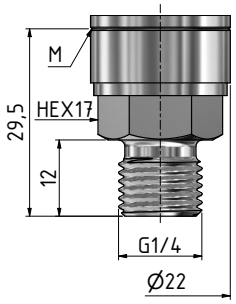


M: marking of diaphragm position

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 compensated temperature ranges within -20…85 °C
- Other cable sheath materials
- Metal parts that come into contact with media made from Hastelloy C-276 or titanium
- O-rings made of other materials
- Modifications to customer-specific applications

Examples of similar products

- Series 26X: Highly accurate level probe with RS485 and analog interface
- Series 26Xi: Highly accurate level probe with SDI-12 interface
- Series 36XW: Level probe with excellent accuracy and RS485 and analog interfaces
- Series 36XW-CTD: Multi-parameter probe with excellent performance and RS485 interfaceSeries
- 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

For pricing or any further information, please contact Omni Instruments Ltd.

Measurement and data acquisition solutions

Contact Details:
Tel: +44 1382 443000
Email: info@omni.uk.com

Website: www.omniinstruments.co.uk

Mailing Address: Unit 1, 14 Nobel Road, Wester Gourdie Industrial Estate, Dundee, DD2 4UH.

Series 36XiW – 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

Issued by an external calibration laboratory accredited by DakkS or SAS.

For pricing or any further information, please contact Omni Instruments Ltd.

Measurement and data acquisition solutions

Contact Details:
Tel: +44 1382 443000
Email: info@omni.uk.com

Mailing Address: Unit 1, 14 Nobel Road, Wester Gourdie Industrial Estate, Dundee, DD2 4UH.

Website: www.omniinstruments.co.uk