

Data logger

ESS3 R2



Data logger with one radial sensor and an additional temperature sensor

The ESS3 R2 series devices are used for leak testing in pipeline construction. In addition to pressure, the pipeline temperature is also recorded. The device automatically calculates the temperature-compensated test pressure and compensates for temperature-related pressure fluctuations, resulting in significantly more meaningful results than pressure measurements alone.

The battery-powered, modular devices can be retrofitted with different pressure measuring ranges and are available in a robust, construction-site-ready design with protection up to IP68 (waterproof).

The control unit stores measurement data for multiple tests in non-volatile memory, displays current values and changes since the start of the test, and transfers the data contactlessly via the optical IrDA interface (USB) to a PC after completion.

A lithium battery enables multi-year operation. Using the TfsWin III software, tests are displayed graphically, stored, and logged.

Sensor

The accuracy and resolution of the sensor determine the reliability of the test. Particular emphasis has been placed on high stability of the pressure measurements under fluctuating ambient temperature conditions.

- Stainless steel-encapsulated, piezoresistive sensor with high long-term stability, suitable for liquid and gaseous media, resistant to aggressive media.
- High resolution of measurement values (typically 1 mbar at a 25 bar measuring range); multiple measuring ranges possible for a single sensor.
- The influence of ambient temperature on the pressure measurements has been eliminated through fully automatic temperature compensation of the pressure sensor.
- High measurement rates enabled by a high natural resonance frequency.
- High overpressure protection and high burst pressure.
- Special versions, e.g., for O₂ measurement.
- Sensibly graduated fixed measuring ranges, as well as user-configurable ranges, with various accuracy classes up to ±0.05 % of full scale (FS).
- Temperature sensors available as probe sensors or suitable for use in thermowells.

Measured parameters

- Relative pressure and temperature
- Absolute pressure and temperature
- Differential pressure and temperature

Applications

- Leak testing of gas supply according to G469 B3 and C3
- Leak testing of water supply according to W400-2
- Leak testing in industrial process engineering

Technical data ESS3 R2

Application	Leak tests according to DVGW G469, W400-2, and TÜV specifications
Sensor connections	A radial sensor connection (M30) for mounting a pressure or temperature sensor
Explosion protection class	Ex II 2G Ex ib IIC T4 Gb
Protection classes, housing	Depending on the sensor: IP 67 for relative pressure, IP 68 for absolute and differential pressure, and temperature W x H x D [mm]: 108 x 162 x 80; Weight [kg]: 1.2
Measuring ranges – pressure sensors	Relative pressure: 0 to 100/250 mbar and 0 to 1/2.5/10/25/100 bar; differential pressure: 0 to 100 mbar, 0 to 1/10 bar. Additional measuring ranges available on request.
Measuring ranges – temperature sensors	-10 °C ... +40 °C and -30 °C ... +150 °C
Measurement interval	125 ms ... 6 h
Initial measurement accuracy	Depending on the sensor (up to ±0.05 % of full scale, FS)
Resolution	Up to 0.004 % of full scale (FS)
Communication interfaces	IrDA; display; keyboard
Operating data	Battery operation: up to 8 years
Display indication	Current value; maximum and minimum values, as well as differential value, memory usage, and battery status
Settings	Time and date; upper and lower alarm thresholds; averaging (2 ... 600 values); resolution; measurement location name (29 characters); storage method (rolling/static)
Operation	Via menu using the keyboard; via TfsWin III software using IrDA interface cable
Data storage	250,000 date-time values / 512 kB
Typical range	2 years (with data compression)
Software	TfsWin III for configuration, visualization, analysis, and archiving of data

Pressure sensor

Media compatibility: All liquids and gases that are compatible with stainless steel 1.4301 and sealing material NBR.

Process connection: G1/2 external thread, G1/8 internal thread

Measuring range	Initial Accuracy % of FS ¹⁾			
	Standard ± 0,4 %	Premium ± 0,09 %	Select ± 0,05 %	Select plus ± 0,05 % < 5 mbar ²⁾
0 ... 100 mbar rel.	x	x	~	~
0 ... 100 mbar Differential pressure	x	~	~	~
0 ... 250 mbar rel.	x	x	~	~
0 ... 1 bar rel.	x	x	x	~
0 ... 1 bar Differential pressure	x	~	~	~
0 ... 2,5 bar rel.	x	x	x	~
0 ... 2,5 bar absolute	x	x	x	~
0 ... 10 bar rel.	x	x	x	~
0 ... 10 bar absolute	x	x	x	~
0 ... 10 bar Differential pressure	x	~	~	~
0 ... 25 bar absolute	x	x	x	~
0 ... 100 bar absolute	x	x	x	~
100 mbar ... 14 bar rel. ³⁾	x	x	x ⁴⁾	~
2,5 bar ... 200 bar absolute ³⁾	x	x	x ⁴⁾	~
100 mbar ... 35 bar Differential pressure ³⁾	x	~	~	~
0 ... 200 bar – 0 ... 700 bar absolute ³⁾	x	~	~	~
Negative pressure	x	~	~	~

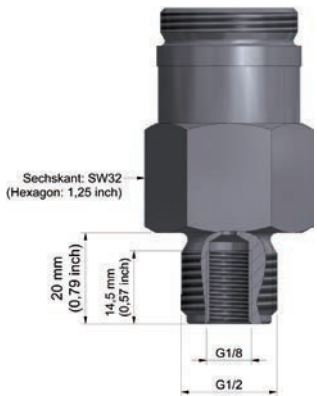


Figure 1: Pressure sensor

- 1) FS: full-scale value
- 2) Deviation < 5 mbar for ambient temperature change of 15 K according to DVGW G469:2010, test procedure C3
- 3) Customer-specific measuring range: freely selectable within these limits
- 4) On request

Temperature sensor

Rod sensor with 5 m cable and connector plug.

Media compatibility: All gases and liquids that are compatible with stainless steel 1.4301.

Process connection: Rod sensor, 150 mm x 4.5 mm

Measuring range	Type	Threaded sensor	Cable sensor
-10 °C ... +40 °C	Probe sensor	~	x
-30 °C ... +150 °C ¹⁾	Probe sensor	~	x
Initial measuring accuracy		±0,3 °C	

- 1) Measuring range freely selectable within these limits

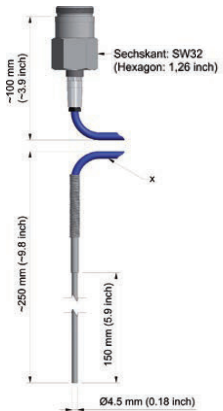


Figure 2: Probe sensor



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