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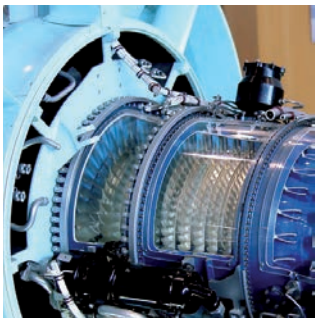
Measured quantities

- Absolute pressure
- Temperature

Applications

- Problem analysis in the water network
- Long-term monitoring in the water network
- Pipe network calculation
- Leak test W400-2



ESS3 A1

Data logger with one axial sensor

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ESS3 A1 overview

The devices of the ESS3 A1 series are used to measure pressures in water networks. These devices are ideal both for short-term measurements to locate problems and for long-term monitoring purposes. Other applications include validation of pipe network calculations and documentation of leak tests according to DVGW W400-2.

Battery-operated devices have a modular design and comprise an operator control unit (housing, processor, software, and display), sensor, and battery in each case. The data loggers are designed for use in underfloor hydrants and in protection classes up to IP 68 (watertight/immersible).

The operator control unit stores the measured values supplied by the pressure sensor in non-volatile memory. The current measured values are continuously indicated on a display. The data is transferred to the PC by means of a non-contact optical IrDA interface (USB connection).

A lithium battery unit enables multiple years of operation under ordinary conditions. The battery status is continually monitored and the remaining battery life is indicated.

The TfsWin III software is used to configure the logger (measuring cycle, measuring location, etc.) and to read out and graphically display the measured data. The communication for this takes place over the non-contact optical IrDA interface. Alternatively, keys can be used to operate the device.

Sensor

The sensor is the metrological link to the application. Performance and ease of use are therefore the central focus:

- A change of sensor by the user is possible and the new sensor is immediately ready for operation without calibration
- Stainless steel-enclosed, piezoresistive sensor with high long-term stability, resistant to corrosive media
- High resolution of measured values; multiple measuring ranges possible for one sensor
- Media temperature measurement
- High measuring rates through high self-resonant frequency, and thus ideal for measurement of pressure surges
- High overpressure protection and high burst pressure
- Appropriately-graduated fixed or customizable measuring ranges and various accuracy classes up to +- 0.05 % of full scale

Technical data

Application	Measurement and storage of pressure in water supply for monitoring and fault analysis, validation of pipe network calculations
Sensor connections	One radial sensor connection (M30) for accommodation of a pressure sensor
Explosion protection class	Ex II 2G Ex ib IIC T4 Gb
Protection classes, Housing	Dependent on the sensor: IP 68 with absolute pressure IP 67 with relative pressure W x H x D [mm]: 108 x 108 x 134 Weight [kg]: 1.2
Measuring ranges of press. sensors	Absolute pressure: 0 ... 2.5/10/25/100 bar - Relative pressure and further measuring ranges on request
Measuring ranges of temp. sensors	-20 °C ... +40 °C (intern temperature sensor)
Meas. precision	Dependent on the sensor (up to 0.05 % of full scale)
Resolution	up to 0.004 % of full scale
Comm. interfaces	IrDA; Display; Keyboard
Operating data	Battery operation up to 8 years
Display	Actual value; maximum and minimum value as well as differential value; Memory utilization and battery status
Settings	Date and time; upper and lower alarm threshold; averaging (2 … 600 values); resolution; measuring location name (29 characters); storage method (rolling / static)
Operation	Via keyboard using menu Via TfsWin III-software using IrDA-interface cable
Storage	250,000 date-time values / 512 kB
Typical operating span	2 years (through data compression)
Software	TfsWin III for parameter assignment, display, analysis and archiving of data

Table 1: ESS3 A1 (Operator Control Unit)

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Pressure sensor

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

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

Measuring range	Precision [% vom FS1]		
	Standard ± 0,4 %	Premium ± 0,09 %	Select ± 0,05 %
0 ... 2.5 bar absolute	x	x	x
0 ... 10 bar absolute	x	x	x
0 ... 25 bar absolute	x	x	x
0 ... 100 bar absolute	x	x	x
2.5 bar ... 200 bar absolute [2]	x	x	x
0 ... 200 bar - 0 ... 700 bar absolute [2]	x	~	~
100 mbar ... 35 bar relative [2]	x	x	x [3]
Negative pressure	x	~	~

1) FS: of full scale
2) customized measuring range; freely selectable within this range
3) on request

Table 2: Pressure sensors ESS3 A1

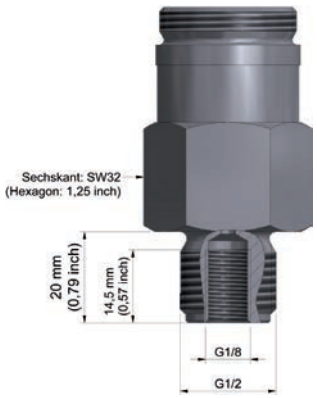

Figure 1: Pressure sensor

Temperature sensor

Internal temperature sensor (optional) that measures the media temperature at the pressure sensor.

Temperature sensor		Sensor	
-20°C .. +40°C	Sensor intern	x	
Measuring precision		+/- 1 °C	

Table 3: Temperature sensor ESS3 A1

Connection accessories

A variety of accessories are optionally available for the connection:

- Bayonet adapter (DIN system) for installation in underfloor hydrants
- Bayonet adapter (Württemberg System) for installation in pit hydrants
- Bayonet adapter (Storz B / C) for connection to surface hydrants
- Adapter for hose connections

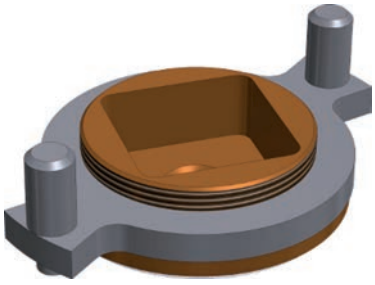

Figure 3: Bayonet adapter

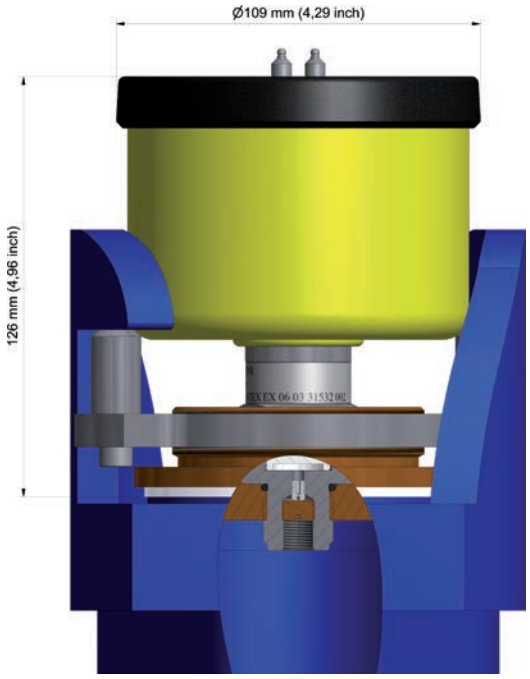

Figure 2: ESS3 A1 in in underfloor hydrant

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