

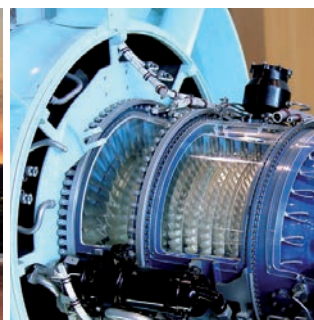


## Measured quantities

- Relative pressure
- Absolute pressure
- Differential pressure
- Barometer reading
- Temperature
- Malfunction contacts (SSV, door, etc.)

## Applications

- Monitoring in gas pressure control and measuring systems
- Monitoring in water pumping stations
- Stationary monitoring tasks



# ESS3 S4

Data logger station with four sensors

### ESS3 S4 overview

The devices of the ESS3 S4 series are used to record pressure and temperature in gas pressure control and measuring systems. The battery-powered devices are also suitable for recording measurements at any location where a power supply is not available and up to 4 measured values must be measured over the long term.

**Battery-operated devices** have a modular design and comprise an operator control unit (housing, processor, software, and display), battery, and up to four sensors. The data loggers are approved for use in hazardous areas (Zones 1 and 2) and are designed in protection class IP54.

**The operator control unit** stores the measured values supplied by the pressure and temperature sensors 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, the device can be operated via buttons.

### Application

In GPCM plants (gas pressure control and measuring systems), the input and output pressures (or other measured values such as gas temperature, SSV positions, etc.) are recording by a data logger in order to obtain information about the operational reliability of the system. This enables irregularities and malfunctions to be detected and eliminated early. In the course of condition-oriented maintenance according to DVGW G495, the testing intervals can be lengthened. All information is immediately available to maintenance personnel on-site on the data logger thanks to the TfsWin III evaluation software.

### Properties

- Up to four configurable sensors for pressure and temperature
- Up to six inputs for malfunction contacts (e.g. SSV, odor, door contacts, etc.)
- Large data memory with data compression for efficient use allows data to be stored for many years
- Long battery life for multi-year operation without battery replacement
- Easy operation via device buttons/display
- Visual data interface to the PC
- Powerful PC evaluation software
- Explosion protection Zone 1

### Technical data

Application	Measurement and storage of data (pressure and temperature) for monitoring gas pressure control systems
Sensor connections	Up to four sensor connections (M30) for accommodation of a pressure or temperature sensor. Up to six binary inputs (Reed, Namur)
Explosion protection class	Ex II 2G Ex ib IIC T4 Gb
Protection classes, enclosure	IP 54 W x H x D [mm]: 286 x 169 x 99 Weight [kg]: 3.5
Measuring ranges of pressure sensors	Rel. press.: 0 ... 100/250 mbar a. 0 ... 1/2.5/10/25/100 bar Diff. press.: 0 ... 100 mbar a. 0 ... 1/10 bar Other measuring ranges on request
Measuring ranges of temp. sensors	-10 °C ... +40 °C as well as -30 °C ... +150 °C Other measuring ranges on request
Measuring rate	500 msec ... 600 hours
Meas. precision	Dependent on the sensor (up to 0.05% of full scale)
Resolution	Up to 0.004% FS
Communication interfaces	IrDA; Display; Keyboard
Operating data	Battery operation up to 10 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
Speicherung	2.000.000 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 S4 (Operator control units)

**Pressure 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
- High overpressure protection and high burst pressure
- Special versions, e.g., for O<sub>2</sub> measurement
- Appropriately-graduated fixed or customizable measuring ranges and various accuracy classes up to +/- 0.05% of full scale

Measuring range	Precision [% of FS <sup>1)</sup>		
	Standard ± 0,4 %	Premium ± 0,09 %	Select ± 0,05 %
0 ... 100 mbar relative	x	x	~
0 ... 100 mbar differential pressure	x	~	~
0 ... 250 mbar relative	x	x	~
0 ... 1 bar relative	x	x	x
0 ... 1 bar differential pressure	x	~	~
0 ... 2,5 bar relative	x	x	x
0 ... 2,5 bar absolute	x	x	x
0 ... 10 bar relative	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 relative <sup>2)</sup>	x	x	x <sup>3)</sup>
2,5 bar ... 200 bar absolute <sup>2)</sup>	x	x	x <sup>3)</sup>
100 mbar ... 35 bar differential pressure <sup>3)</sup>	x	~	~
0 ... 200 bar - 0 ... 700 bar absolute <sup>3)</sup>	x	~	~
Negative pressure	x	~	~

1) FS: Full scale  
 2) Customer-specific measuring range; freely selectable within this range  
 3) On request

Table 2: Pressure sensors ESS3 S4

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

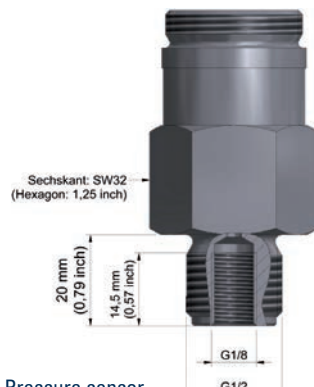


Figure 1: Pressure sensor

**Temperature sensor**

The temperature sensors are suitable for installation in thermowells. Other sensors on request.

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

Process connection: G3/4 internal thread

Temperature sensor measuring range and type		Cabel sensor
-10 °C ... +40 °C	Thermowell 90 mm	x
-10 °C ... +40 °C	Thermowell 140 mm	x
-30 °C ... +150 °C <sup>1)</sup>	Thermowell 90 mm	x
-30 °C ... +150 °C <sup>1)</sup>	Thermowell 140 mm	x
Measuring accuracy		+/- 0,3 °C

1) Freely selectable measuring range within these limits

Table 3: Temperature sensor ESS3 S4

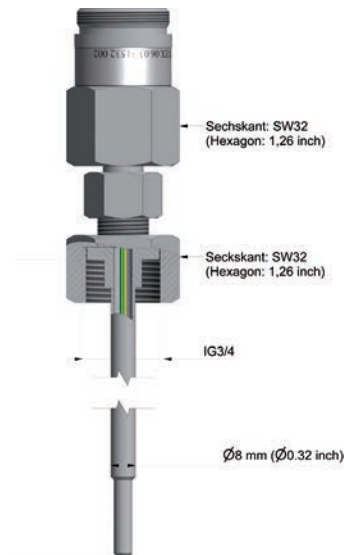


Figure 2: Temperature sensor, thermowell