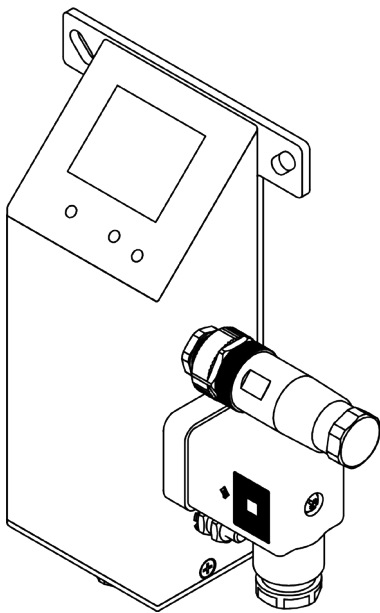


ES-2.. ELECTRONIC SAFETY SWITCHING DEVICE FOR PRESSURE MONITORING

General data

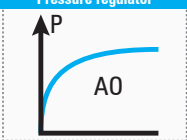
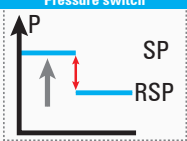
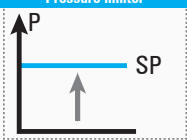



The ES product line comprises electronic safety switching devices for pressure monitoring with extensive self-diagnosis functions and a fail-safe design. The devices are mainly used as pressure regulators for minimum and maximum pressure limitation on compressors in cooling and ventilation systems, on heat pumps as well as on steam boilers and hydraulic systems.

Except for the integrated switching relays, there are no mechanically moving components, which provides a high vibration resistance and a long service life.

The switching limits can be conveniently set and precisely monitored. Extensive self-diagnosis functions as well as logging options not only ensure safe monitoring and quick shutdown of a hazard, but also offer a high traceability level of events that have occurred.

Any pressure switch, pressure limiter or safety pressure limiter (also combined) is an EU type-tested safety switching device for pressure limitation (certificate number: XXXXXX).

<p>Pressure regulator</p> 	<p>Pressure regulator The reaction of the device to pressure changes can be specified by entering parameters, e.g. two-point regulator, PID regulator. More functions can be added upon customer request.</p>
<p>Pressure switch</p> 	<p>Pressure switch (PSH, DWK) Switch and reset point setting (hysteresis) is automatically reset or unlocked.</p>
<p>Pressure limiter</p> 	<p>Pressure limiter (PZH, DBK) Switch point setting is reset or unlocked manually (without tools).</p>
<p>Safety pressure limiter</p> 	<p>Safety pressure limiter (PZHH, SDBK) Switch point setting is reset or unlocked manually (with a tool).</p>

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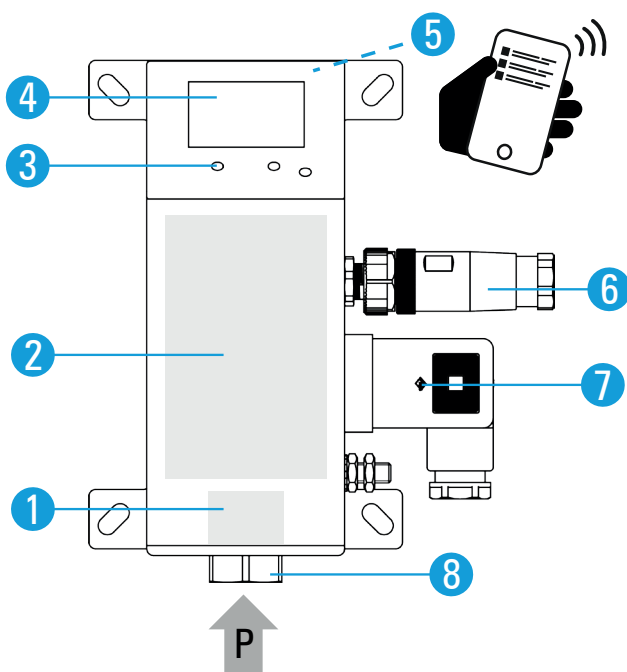
System structure

The ES units feature a compact, anodised aluminium housing, and, depending on the version of the device, they are specially designed as pressure regulators, pressure limiters, pressure switches or safety pressure limiters. Combinations, such as series-connected pressure limiters and safety pressure limiters, in accordance with EN 378, can also be implemented within one and the same device.

Basically, the devices are supplied with preset limit values and parameters that are password-protected, i.e. „sealed“, in other words. After unlocking (password entering), authorised persons can change the device settings and also carry out manual tests on the device or via the app.

Monolithic pressure measuring cells, made of stainless steel, are used for monitoring relative pressures. Since there are no sealing rings and no welding seams, the ES devices offer a high degree of robustness and media compatibility, even with aggressive media. Regardless of the relative or differential pressure measurement, correct functioning of any pressure measurement is checked and documented by the device itself during operation.

The units have two independent switching outputs, which are connected to form a self-monitoring switching output in the versions ES-21 and ES-22. The installed relays are permanently monitored by means of an additional circuit, preventing any opening failure reliably. In addition, the switching function is independently checked by the device, both when the power supply is applied to the unit and at regular intervals during operation. In the event of a fault, the unit always switches to the safe state.



- 1) Redundant pressure detection for high reliability
- 2) Main electronics with switching relay and self-diagnosis function
- 3) Operating keys for on-site operation with VDMA menu structure for unlocking (depending on the version)
- 4) Display of process variable(s), alarms and device status
- 5) Bluetooth communication to a smartphone or a similar device to set & manage the device and read out diagnostic protocols / measurement data
- 6) Connector (1) - Connection of power supply, analogue and digital signals (pressure reading, alarm 1, alarm 2, remote unlocking)
- 7) Connector (2) - Connection of the switching channels
- 8) Process connection - G1/4" female thread (relative pressure) or pipe fittings (differential pressure)



Any self-reported diagnostics and safety checks performed by the device are stored and can be retrieved at any time via the app.

Test the app now!

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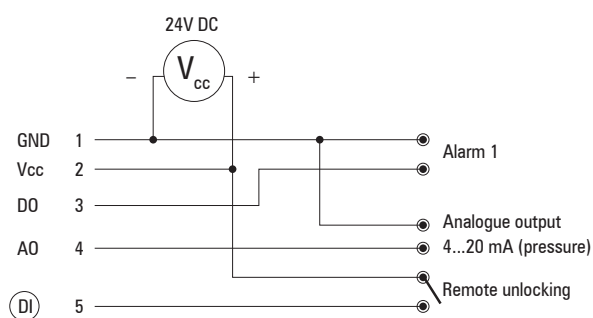
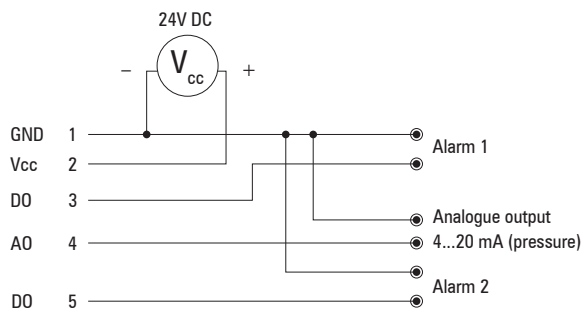
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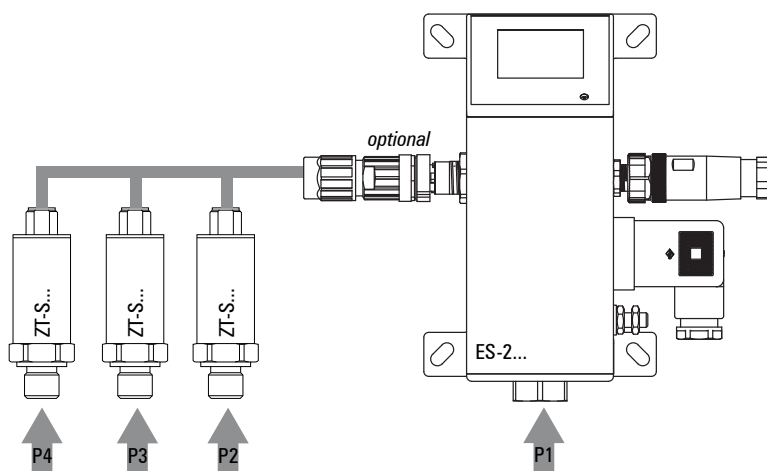
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Example connector 1

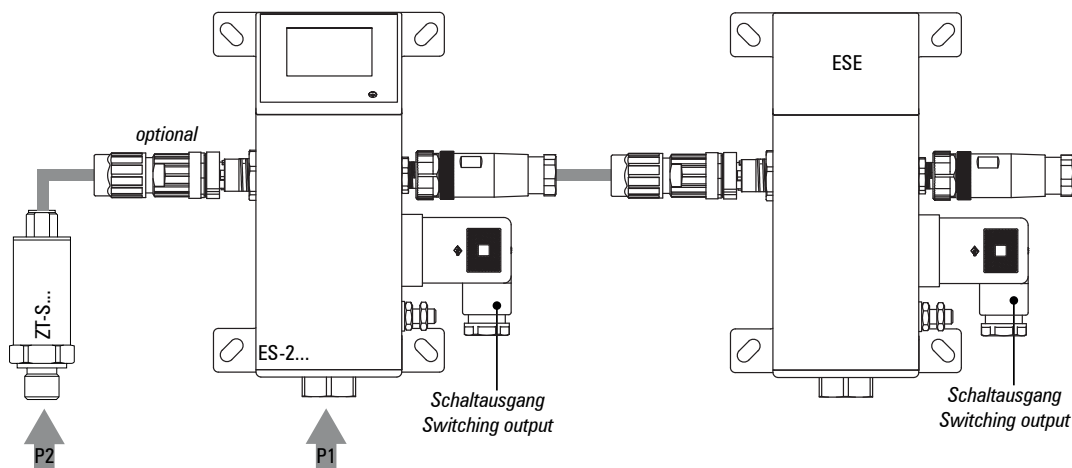


Example: Measuring channel extension



Depending on the application, it may be necessary to use several pressure switches for several pressure circuits. In this case, an ES device can be equipped with a channel extension. For this purpose, specially developed SIL-2-compliant pressure transmitters (ZT-S...) are connected to the ES unit via a safe communication interface. The ES device is capable of monitoring several pressure circuits and provides a collective alarm when one of the set limit values is reached. Setting, logging and testing work the same way as with a single-channel unit.

Example: Extension of measuring channel and switching output



Apart from additional measuring channels, more switching contacts are added by means of an extension unit (ESE). This makes it possible to set up a shared safety chain, e.g. of several pressure transmitters and switching outputs.

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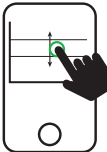



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Advanced device functions

	<p>Wireless communication via smartphone</p> <p>Limit values, delay times and configuration of the inputs and outputs can be easily set using a smartphone. In addition, various devices of the ES series can be managed and their profiles can be saved. Manual tests (e.g. relay switching) can be carried out without applying pressure.</p>
	<p>Retrieval of set-up and test protocols</p> <p>All devices are factory-set and carry out regular diagnoses independently. The setting log, all test results, alarms and changes can be accessed via the app.</p>
	<p>Integrated data logger</p> <p>The ES units act as data loggers with an internal memory and timer. Besides the process pressure, the temperature at the process connection is also recorded. Depending on the application, a specific time, a period of time or continuous measurement is selected.</p>
	<p>Leak test of the system</p> <p>When commissioning a system, the devices of the ES series are also used for leak testing, due to their precise measuring features. This involves determining and documenting the pressure drop and the temperature conditions at the process connection during an adjustable test time. The leak test protocol is stored in the device and can be read out via a smartphone.</p>

Models of the ES-2.. device family

	ES21	ES22	ES20	ESE
SIL2	✓	✓	✓	✓
Type examination according to the Pressure Equipment Directive	✓	✓	✓	✓
Safety functions:				
One safety function - preset (DWK or DBK)	✓			
Two combined safety functions - preset		✓		
Two combinable safety functions - freely configurable			✓	
Predefined control algorithm (PID etc.)			✓	
Measurands:				
Selectable parameters: Pressure, differential pressure	✓	✓	✓	
Direction of action:				
preset: Rising (maximum) or falling (minimum)	✓	✓		
preset: Combination maximum and minimum		✓		
Freely configurable: Combination of maximum and minimum			✓	
Extension option for measuring channels by means of additional sensors		✓	✓	
Extension option of switching channels by means of ESE		✓	✓	✓

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