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Low-profile pressure transmitters for industry 4.0

Martin Reckziegel

Product Marketing Manager Pressure Sensors
Temperature & Pressure Sensors Business Group

TDK has expanded its portfolio with new EPCOS pressure transmitters whose performance profiles are specially tailored to the requirements of industry 4.0. These low-profile pressure sensors are characterized by their compact design, high accuracy and excellent long-term stability.

Big Data is the prerequisite for industry 4.0 solutions and processes. The basis for generating the required data in industrial processes and environments are the various types of sensors. The demand for pressure sensors and transmitters is increasing accordingly.

The leading basic pressure sensing technologies for MEMS are based on the piezoresistive and capacitive principles. While the latter is mainly suitable for consumer applications, the strengths of the piezoresistive principle are especially important for automotive and industrial applications. Piezoresistive pressure sensors excel in terms of the following key performance parameters:

- High absolute accuracy
- Low temperature coefficient
- Low temperature hysteresis
- High robustness against different media
- High long-term stability

Absolute, gauge and differential measuring methods are used for a wide variety of tasks and requirements in industrial pressure measurement. These methods can be realized particularly well with piezoresistive MEMS technology.

Ultra-flat and networkable

A new series of low-profile pressure transmitters specially designed for industry 4.0 applications features an extremely flat insertion height of only 6 mm and a footprint of 24 x 26 mm with feedthroughs for simple, maintenance-friendly screw mounting. This transmitter series is designed for a wide range of maximum rated pressures from 16 mbar to 7 bar FS (full scale). In the temperature range from -25 °C to +85 °C it achieves an accuracy of ±1 percent FS. The transmitters can be used for a wide range of applications, and they offer an accuracy of ±1 percent FS (full scale). Installation is very simple, as only two screws are required. The integrated SPI interface (serial peripheral interface) with a resolution of 16 bit enables simple implementation in digital industry 4.0 architectures. Thanks to the two connectors integrated in the transmitters, they can be easily networked in daisy chain topologies. These transmitters are optimized for differential pressure measurement that, for example, is used in the predictive maintenance of filter systems, pump control or gas flows.



Figure 1: The new low-profile pressure transmitters with digital output are ultra-flat and easy to network. This makes them ideal for implementation in industry 4.0 applications.

MiniCell® – robust, versatile and accurate

The MiniCell family of miniaturized pressure transmitters is suitable for a wide range of industrial applications, especially in harsh environments. They cover a pressure range from 0.5 to 10 bar and can be operated at temperatures between -40 and +140 °C. They also achieve an accuracy of <1.5 percent FS over the entire temperature range and lifetime. Particularly noteworthy is the high media resistance of these transmitters. It is made possible by a stainless steel diaphragm, which transmits the pressure to the sensor element via oil-filled and media separated sensor cells. This enables the pressure measurement of aggressive liquids and gases. Despite their great robustness, these transmitters have miniaturized insertion height of just 11 mm and footprint of 16.2 x 19.6 mm. Types available are for absolute, relative or differential measurement. The analog interface offers an output signal of 0.5 to 4.5 V.

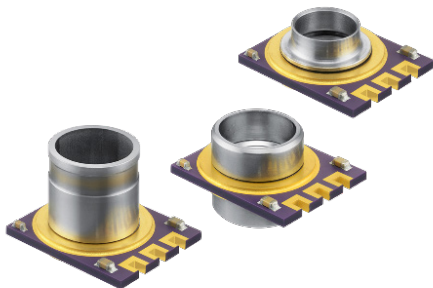


Figure 2: The pressure transmitters of the MiniCell family combine great robustness with high accuracy and small dimensions.

Together, these analog and digital solutions provide TDK with a platform of rugged and, above all, low-profile transmitters for a wide range of industry 4.0 applications.



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Please forward reader inquiries to marketing.communications@tdk-electronics.tdk.com.

Contacts for regional media

Region	Contact	Phone	Mail
Europe	Mr. C. JEHLE TDK Electronics AG Munich, Germany	+49 89 54020 2441	christoph.jehle@tdk-electronics.tdk.com
North America	Ms. D. MARTIN TDK Electronics Inc. Fountain Hills, AZ, USA	+1 480 836 4104	debbie.martin@tdk-electronics.tdk.com
South America	Mr. C. DALL'AGNOL TDK Electronics do Brasil Ltda., Gravataí, Brazil	+55 51 3484 7158	candido.dallagnol@tdk-electronics.tdk.com
India	Mr. G. DALVI TDK India Private Ltd. Mumbai, India	+91 22 2575 0804	girish.dalvi@tdk-electronics.tdk.com
Greater China	Ms. S. SUEN TDK Electronics Hong Kong Limited, Hong Kong	+852 3669 8224	stella.suen@tdk-electronics.tdk.com
Japan	Mr. Y. OSUGA TDK Corporation Tokyo, Japan	+813 6778 1055	pr@jp.tdk.com