

Variohm EuroSensor's comprehensive range of piezo resistive pressure transducers

As a designer and manufacturer of measurement sensor components and a distribution partner for other leading sensor suppliers, Variohm EuroSensor offers a comprehensive range of pressure transducers that find widespread use for measurement and monitoring tasks in industrial machinery, medical equipment, science and research projects, automotive engineering and test, and many other areas.

Pressure transducers, also known as pressure sensors or pressure transmitters, accurately sense pressure in gases and liquids and output the value as an analogue or digital signal in real time. The pressure, measured as the applied force by a fluid (liquid or gas) on a surface area, can be either an absolute value referenced to zero pressure, or a gauge value relative to ambient pressure, or a differential value between two independent pressure sources. Normally measured in units and sub-units of a bar, the output values can be a positive or a negative vacuum pressure.

Using the latest technology sensing and electronics elements, Variohm utilises three main methods of building pressure transducers which are all piezo resistive approaches. The most used technology for our product range is a resistive bridge printed onto a steel membrane with thin film measuring cells that are fully sealed in hermetically welded housings with no O-rings. These products provide excellent performance characteristics in terms of stability, sensitivity, performance over temperature and handling of higher frequency applications.

The second technology has similar design characteristics but with a methodology where resistors are bonded onto the pressure transmitter membrane. This affords more freedom in the selection of the material for wetted parts and can therefore be used on applications that demand more stringent media compatibility requirements.

The third technology we employ is based around a silicon chip which measures the applied pressure. This technology is the least robust against media and pressure peaks as it has internal O-Rings. However, due to the higher integration of the chip on the sensor's PCB the cost of this technology allows more cost-effective products if the application is suitable.

A wide choice of industry compatible voltage or current outputs are available, as well as signal output options such as CANopen, J1939 (SAE-J1939) and HART. The same technology can also be employed as part of a pressure switch that will trigger a relay output when a pre-set pressure level is reached.

Variohm's comprehensive product portfolio spans absolute, gauge and differential pressure measurement in several pressure range variants from a few millibars up to 5000 bar. The selection of the correct pressure range is the most important factor when specifying a suitable sensor and Variohm recommends roughly 50 to 75% of the sensors' overall pressure range. A sensor with a much wider pressure range than required would cause accuracy problems whilst using a pressure sensor with a range too close to maximum could cause the burst pressure (overpressure) to be exceeded, resulting in sensor damage. The accuracy of Variohm's pressure

transducers is typically between 1% and 0.15% depending on the selected model for the application.

The widely specified EPT series, developed and improved over several years, is well proven in automotive & mobile machinery, industrial hydraulics, refrigeration, off-road construction and agricultural applications. A recent development for the range is the new [EPT31H2 pressure transducer](#) which has EC79 approval for use with hydrogen processes up to 700 bar with a full range to 1000 bar. The EPT range also includes miniature versions for space-restricted applications, low power consumption versions for remote battery-operated equipment, and versions that include SIL 2, PL:d safety compliant options.

Variohm pressure sensors are characterised by high strength, ruggedised designs with housings and wetted parts suited to the potentially corrosive properties of the measured gases and liquids. Most often used materials across the range are various grades of stainless steels although thermoplastics, brass, and more exotic housing and wetted parts materials such as titanium are also available. The comprehensive range includes miniature designs and a wide choice of pressure port configurations and electrical interfacing options for maximum application flexibility. Environmental ratings from IP65 to IP69K ensure high resistance to debris and water ingress. Variohm also offers combined pressure and temperature transducers that enable a single device to take measurements of both variables, saving valuable space and simplifying system controls.

Applications range from level and flow measurement for filtration processes in the beverage industries to monitoring pressure levels on medical devices such as ventilators. Pressure sensors are commonly used for system safety in oil and gas extraction and precise control in mobile hydraulics. Amongst the most demanding environments, and a true proving ground for Variohm over several years in the business is that of vehicle technology and in particular the world of motorsports. One of many applications in this area is for vehicle brake pressure monitoring where typical shock levels are specified to 1000 g and vibration to 16 g peak (20 to 2000 Hz).

Variohm EuroSensor works closely with its customers in all industries on an engineer-to-engineer basis, providing a specialist technical support service with stock delivery available across a wide range of field-proven sensors - and complete aftersales support.

To address the ever-changing need for increased precision, faster measurement and improved durability, the Towcester-UK based designer manufactures and sources a comprehensive range of sensor technologies for linear and rotary position, load, force, vibration and temperature measurement in demanding applications throughout industry, agriculture, construction, autosports, aerospace and research. For further information visit www.variohm.com, email sales@variohm.com or call + 44 (0)1327 351 004.

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