

GUIDE TO SELECTING THE RIGHT PRESSURE TRANSMITTER (TRANSDUCER)

The most important aspect of using a pressure transmitter is selecting the right product for the application. Below we identify the major factors which need to be considered.

PRESSURE RANGE



It is important to know the operating pressure range for the application and whether it is gauge, absolute or differential. While this is obvious it is also important to know what the pressure extremes might be in the application. The #1 cause of pressure transmitter failure is unexpected overpressures. The **proof pressure** and **burst pressure** of the selected device can be critical to ensure long term reliability.

STS Pressure Transmitters offer a high proof pressure of up to 400% which allows the user to select the required range of operation and not be concerned about the occasional over pressure which may occur up to 4x the transmitter range. Burst Pressures of at least 10x are also standard for STS products.



ACCURACY

Accuracy comprises many individual components. The most common of these is known as „static accuracy“ which includes non-linearity, hysteresis and repeatability measured under static conditions at ambient temperature. Other factors such as vibration, temperature changes, orientation, zero/span settings and time have an effect on accuracy. These require discussion and understanding when selecting a transmitter.

STS offers outstanding performance including static accuracies of <0.05% and repeatability and hysteresis of <0.01%. Temperature effects generally constitute the largest error with a pressure transmitter but for STS these can be as low as 0.3% over the operating temperature range.

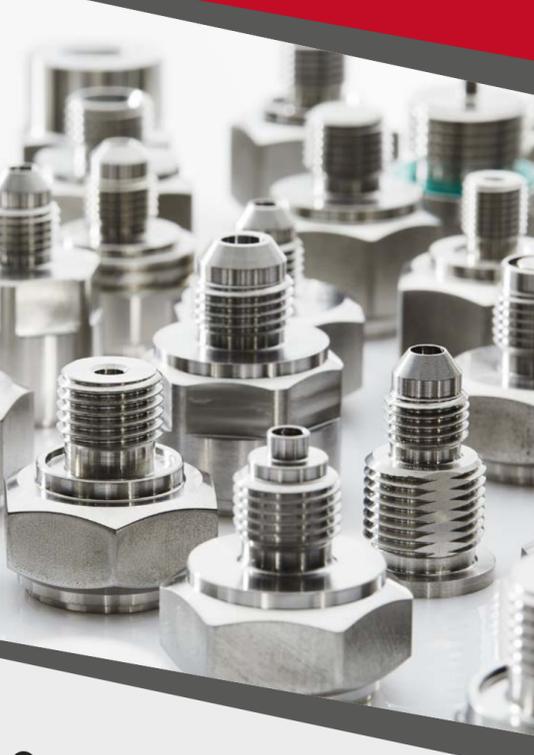


INTERFACE



PROCESS CONNECTOR: This is integral to the pressure transmitter and needs to be suitable for the particular industry of use. Adapters should be avoided where possible. **STS** provides all popular process connectors such as NPT, G1/4, UNF, M8, plus more than 200 additional versions to suit market sectors.

ELECTRICAL CONNECTOR: This is integral and also needs to be suitable for the appropriate industry. These can take the form of being welded to provide hermetic sealing or as an electrical cable. **STS** provides all popular electrical connectors such as DIN, MIL, and more than 25 additional versions to suit market sectors. **STS** achieves this flexibility due to the modular construction of the transmitters.



TEMPERATURE

All pressure transmitters will drift with changes in ambient temperature. In fact, this is generally the greatest error the user would experience.

STS transmitters have very good repeatability with changes in temperature and this helps in providing the best performance. Transmitters are temperature compensated over a specified range such as 0 to 50°C, -40 to 150°C etc. Different thermal accuracies are achievable over the compensated temperature range and are generally specified as TEB (Temperature Error Band). These can vary from <0.3% to 1.5%, for example. Temperature environment must be carefully considered when selecting a pressure transmitter.

OUTPUT SIGNAL



Historically pressure transmitters operate from a DC voltage (typically 0 to 9 - 35VDC) and provide an **analog output** of either voltage (0-5VDC) or current (4-20mA). Currently there are an increasing number of requirements for a **digital protocol** such as RS485 (ModBus), HART, etc.

STS offers a wide variety of outputs and care should be taken in considering the cable length required. Also, the resolution of digital outputs must not limit the expected accuracy.

Selection of the output will depend on the type of instrumentation which is planned for the installation.



SIZE

For many applications, space can be very limited for the mounting of pressure transmitters. Often the weight is also important. Therefore the size of the transmitter can be critical.

STS uses **piezoresistive silicon pressure technology** which is well suited for small size and permits us to offer transmitters as small as 0.69" (17mm) diameter.

MATERIALS



Materials of construction are also important. Where will the transmitter be deployed? Which ambient conditions will it encounter? Will it come into contact with steam, fuel or any corrosive gases or fluids? These need to be carefully considered and will therefore lead to the selection of the materials used for the pressure transmitter.

STS generally offers **300 series Stainless Steel** as its standard material of construction but many others are available such as Titanium, Hastelloy, Inconel, PVDF (Kynar®) etc.

If an integral cable is required then the same careful selection criteria needs to be made.



CERTIFICATIONS

Some applications involve the pressure transmitters being installed in hazardous locations. Others require hygienic approvals for food and beverage measurements. It is important to recognize whether the application will require any special approvals when selecting a pressure transmitter.

STS offer certifications suitable for many of these applications with approvals recognized on a Global basis. These include **FM/FMC, ATEX,** and **IECEX** products are marked accordingly. All calibration certificates are traceable to National standards.

DELIVERY PERIOD



Long delivery periods can delay prototype testing and ultimately jeopardize product introductions. It is therefore important to establish the project timelines, especially if the transmitter requires customization.

STS is specialized in providing pressure transmitters customized to specific applications within the **shortest of timeframes**. Delivery of catalog and custom products once the design is complete are typically 3 - 4 weeks and **STS** is proud to support this with close to 100% OTD (On Time Delivery).

SELECTING THE RIGHT PRESSURE TRANSMITTER SUMMARY

Can you use a standard catalog product?

Know the operating pressure range and proof/burst pressures. Understand the accuracy options and requirements. Select the right process connector avoiding adaptors. Identify the electrical connector required in the application. Specify the operating temperature range and temperature extremes. Know the supply voltage available and the type of electrical output required. Consider any size restrictions which may apply.

Know the pressure media and the surrounding environment for material selection. Are there any local or hazardous environment certifications required. Discuss the project timeframe with the manufacturer.

