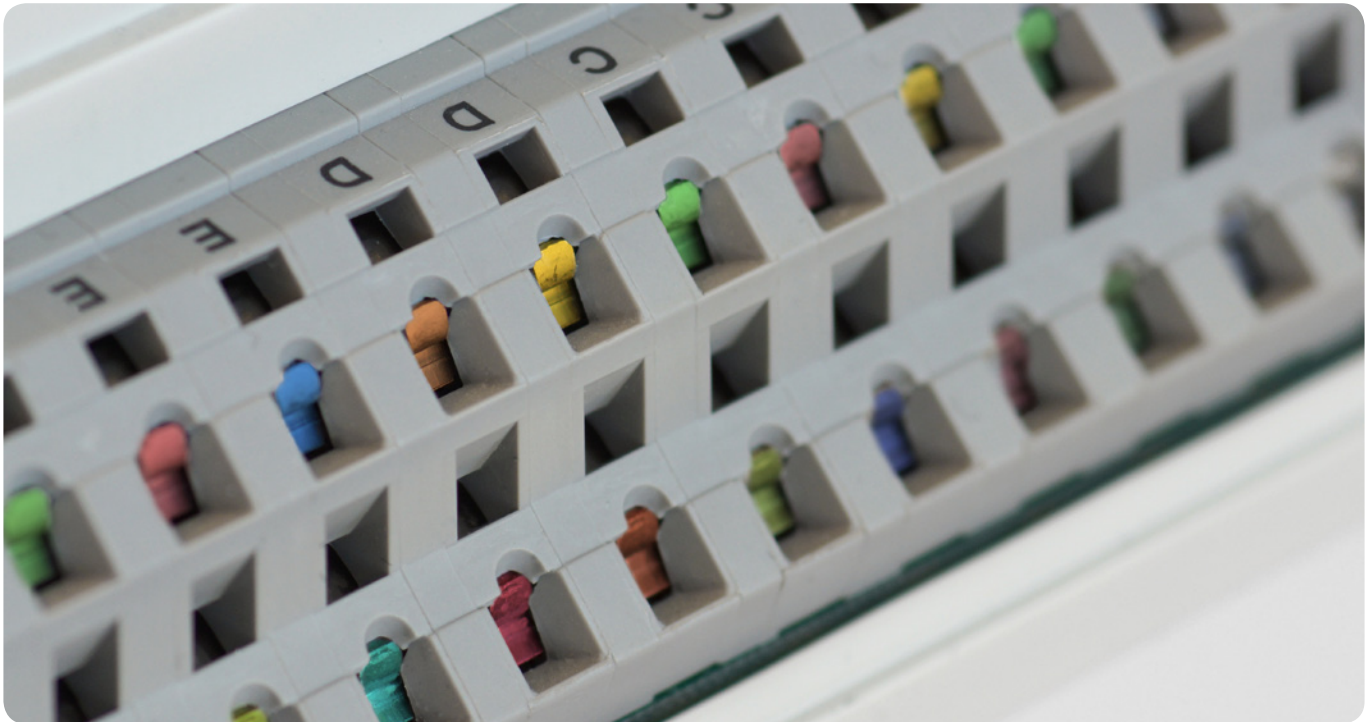




Configurable Connections



Industrial control systems often require many types of different sensors. These can for example be switches, temperature sensors or any sensors with a voltage output.

This may lead to a system with many different versions of input modules. A Specific Component from SGA that realizes configurable inputs can significantly reduce the need for different hardware versions.

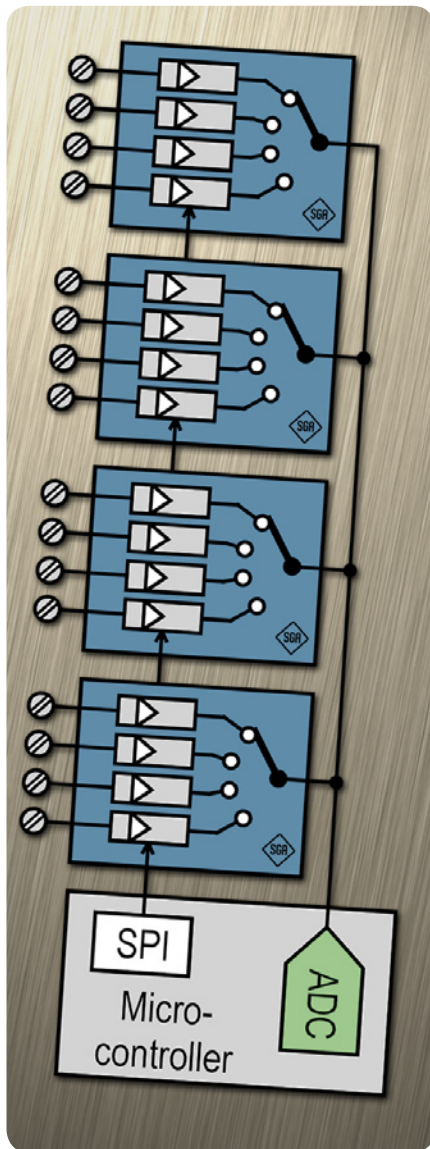
Each sensor type in a control system requires its own bias and measurement environment. A temperature sensor might for example need a bias current and proper scaling of the output voltage while a switch type sensor perhaps needs another bias current and a simple voltage threshold only.

A system that should include many types of sensors will then also need many different types of input modules. A Specific Component is a way to reduce both complexity and the number of versions for sensor input modules.

Microcontroller companion

A well partitioned solution includes both a microcontroller and a Specific Component connected by a serial interface and an analog measurement bus. Several sensor channels can be integrated in one Specific Component. Several such components can then be addressed by one microcontroller.

The microcontroller is probably a part of the system already. It is used for configuration management, to address the different sensor channels and to actually perform the A/D-conversions.



The Specific Component includes functions for configuration for different sensor types. It also includes analog signal processing functions as well as hardware to multiplex the measurement readings to the analog bus.

Performance of the microcontroller can be selected according to the application needs concerning for example A/D resolution and overall measurement speed. This makes it possible to create an optimized solution both for low cost and for high performance applications using the same Specific Component.

Identical hardware

The basic principle for the Specific Component is to be able to interface many sensor types with the same hardware. This could for example be temperature sensors or other resistive sensors. It could also be switches or any sensors with current or voltage output.

Different sensor types will need different type of bias and supply. Also this can be configurable within the Specific Component.

There are many, many possibilities to combine different sensor inputs in one Specific Component. There are also two different general approaches that should be considered.

Production Configurable

A solution that is configurable during production is used to optimize production rather than to be flexible for the end user. Each product is unique but shares the same Specific Component with many other

products. This type of product is probably configured by the microcontroller at startup. It would also be possible to select configurations with external components.

User Configurable

A solution that is user configurable is used to allow the end user to program inputs for different sensor types. This is a very flexible solution that minimizes the number of different hardware versions.

Configuration of the Specific Component is in this case performed by the microcontroller under user control. Configuration with external components is not possible in a true user configurable approach. Any combination of production and user configuration is of course also possible.

There are endless possibilities to create a Specific Component that interfaces different sensors to a microcontroller. This general principle creates a very flexible measurement system that can be optimized for user configurability and/or for production configurability.

We want to find the best solution for your application.

Contact SGA for Configurable connections

specific  **components**

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