

Safety solutions for different complexity in food machinery

Machinery for food manufacturers are often custom-built in accordance with the customer's specifications. This article looks at the different options for implementing the machine safety solutions in such machinery.

Three options

Basically, there are three options for the implementation of the safety system. For the simplest of the systems, with only a few I/O's and limited requirements, standard safety relays are adequate. The **Sentry** series from ABB is a widely used solution that is characterized by its economical, simple design, and furthermore, it can be put to use immediately since it does not require any programming or complex setup.

When a larger number of safety sensors and I/O's are needed, or if more advanced functions are required, particularly in terms of communication with the control PLC, programmable safety controllers are a popular choice. The ABB **Pluto** series is a good example of such a system, to which the most commonly used safety equipment can be directly connected. Pluto is a powerful stand-alone safety controller that is still easy to use. A free software is also provided for programming the controller.

Finally, PLC control systems with integrated safety are often used for the most complex systems. They are powerful and versatile and offer the same number of safety functions as safety controllers. Because both machine control and safety functions are performed by a single controller, communication is facilitated and the entire configuration can be executed in a consistent programming environment. Moreover, the advanced diagnostics they enable help engineers and end users in their everyday work. The **B&R X20** system is a highly capable PLC with integrated safety and proven compatibility with the safety sensors from ABB.



Sentry



Pluto



B&R X20

B&R**ABB****Type/size of machine****Type of controller****Type of sensor**

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|---|---|--|--|
|  <p>Complete production lines with factory automation & safety</p> |  <p>B&R X20 PLC with integrated safety</p> |   <p>OSSD standard easy-to-use protocol</p> <p>DYNlink interface saves up to 50% of inputs</p> | |
|  <p>Stand-alone safety solutions independent from control platform</p> |  <p>Pluto stand-alone programmable safety solution</p> | | |
|  <p>Small machines and simple safety applications</p> |  <p>Basic ready-to-use safety functions with Vital/Sentry*</p> | | |

Different communication interfaces

ABB offers different communication interfaces for connecting safety sensors to the safety controllers, in order to suit the requirements of different customers.

OSSD is a communication protocol that is widely used for different types of safety sensors. It is simple and easy to use and enables connection of multiple sensors in series while still keeping a high level of safety. Most safety controllers on the market (including Sentry, Pluto and B&R X20) can connect and monitor OSSD sensors.

DYNlink is an alternative communication protocol that is unique to ABB. It is a clever sensor-communication and cabling solution that makes it easy to reach the highest level of safety using a minimum amount of cables and controller inputs. Compared to OSSD, DYNlink only requires half the amount of inputs while still keeping the highest level of safety in serial connections. Furthermore, DYNlink also enables add on features such as StatusBus in order to get the status information for each sensor without having to add any extra wires. DYNlink is compatible with Pluto and Vital as well as B&R X20.

*Note that DYNlink is not compatible with Sentry.

ABB safety products

For more than 30 years, ABB Jokab Safety has been helping machine builders to create a production-friendly and safe working environment for machine operators. The portfolio includes machine safety solutions for stand-alone machines and for entire production lines. The products range from simple safety relays and diverse safety sensors to comprehensive safety PLCs. The solutions are used in a wide range of industries including food production, the OEM market and the robotics sector.

B&R

B&R, which is part of ABB, is an innovative automation company that offers customers, across virtually every industry, complete solutions for machine and factory automation, motion control, HMI and integrated safety technology. It is the latter discipline in particular, that completes the ABB range in terms of machine safety. The combination of ABB safety products and B&R is a valuable supplement for machine builders who want to take advantage of digitization opportunities, in the food production sector, among others.