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Focus on what is important

Relay modules for evaluation of safety-oriented signals

A new range of safety relay modules from Schmersal is simple to adapt to individual requirements. A single module covers a range of applications. Other features include short address times and pre-configured applications – functions which are required in, for example, packaging machine construction.

Concatenated processes, high throughput, short cycle times: these are the typical features of machines and systems in the packaging industry. As the systems are often integrated into the whole production flow, there are very exacting requirements in terms of availability. The plant operators also want increased flexibility. If new packaging sizes or formats are produced or special promotions with free gifts are produced, the packaging machines and lines must be able to be adjusted as cost-effectively as possible.

Program expansion thanks to customer focus

This profile of requirements was something the developers in the Schmersal group considered when they planned the fundamental redesign of the established Protect-SRB range.

This is the abbreviation used for the safety relay modules for evaluating safety-related signals. One of the major reasons for this project was the desire for simplification and standardisation. Partly because of customer requests for special designs, the Protect-SRB range had steadily increased in size over the years. All in all, it included more than fifty safety door monitors, emergency stop safety modules, etc. However, this variety does have both pros and cons: for the user, it means they must have the right safety module available for each application. It also means that, for each application, different relay modules need to be selected, ordered, stocked, fitted and connected.

When developing its new Protect-SRB-E range, the aim was to preserve the benefit of the wide range of applications without the disadvantage of the large numbers of product variants. With this in mind, the developers at the Schmersal Safe Control Technology Centre of Excellence in Wettenberg restructured and streamlined the whole Protect-SRB range and the functions of the safety relay modules. The new SRB-E programme comprises eight versions, and each version replaces several dozen existing SRB modules. This is made possible mainly by the configuration capability of the modules: The rotary switch is an easy to handle control element which the user can use to choose from up to eleven applications – a feature familiar in machine safety, e.g. from the Protect Select compact safety controllers.

Wide range of applications – simple selection

This means that, with eight models, the uncomplicated range can cover a whole range of possible application profiles. The modules are therefore suitable for monitoring all common electromechanical and electronic safety switches and interlocks as well as safety sensors and opto-electronic safety equipment (AOPDs). All equipment versions can be used in applications up to category 4/PL e according to EN ISO 13849-1 and also SIL 3 according to EN 62061/ IEC 61508.

The significantly reduced number of versions as well as the product-accompanying clear overview of the eight versions with their respective functions make it much easier for the machine manufacturer to select the right module for his particular application: The desired application is set easily using the rotary switch. A second rotary switch enables the selection of additional functions, such as



Users of packaging machines have exacting requirements in terms of machine productivity and availability.



Two rotary switches allow the function to be set (up to 11 can be selected for each module) and further parameters, such as drop delay time, to be set.

drop delay time or the use and configuration of a second safety function.

Flexible parametrisation, short response times

The additional options that the Protect-SRB-E range offers to the user included contact configuration of the safety sensor, cascading via secure inputs, the choice between stop category 0 and 1 and one or two-channel signal evaluation. All variants have very short response times: From the request from the safety equipment to the shutdown of the safety outputs, it is normally less than 10 ms. This is a key feature for the high-speed packaging machines. This guarantees a high level of transparency: There are LED displays to give the user detailed diagnostic and status messages.

Compact housing makes installation easier

For the Protect SRB-E series, the Schmersal design engineers have developed a new housing in a uniform construction width of 22.5 mm. The major features include a lead-sealed transparent front plate cover in order to secure the functional settings made.

Pluggable, coded device connectivity and simple identification of modules by means of device tag recognition make installation easier and guarantee quick assignment of electrical equipment for maintenance or trouble-shooting purposes. Despite their compact form, the new modules feature up to ten secure inputs and five secure outputs. Operation-related signals, e.g. for diagnostic purposes, can be output from up to four message points.

Variants for demanding applications

One version of the SRB-E series is distinguished by p-switching secure performance semi-conductor outputs up to 5.5 A. This SRBE model is particularly suited to secure applications with high switching performance in conjunction with very short cycle times, for example switching of valve hubs or complete output modules.

Other variants have a combination of safe relay outputs and safe semiconductor outputs in Category 4/PL e. The user can opt for a module which is fitted with an input expansion for up to four sensors and which can also be monitored to Performance Level PL e.



Push-fit and coded connection technology and simple identification of the modules via BMK simplify installation.

A combi version makes it possible to monitor two safety functions with one device, such as a two-hand operating panel and an emergency stop function. The secure outputs, which are available separately, can be linked together by the user as a function of the application.

Shifting the boundaries

With this profile of properties, the new Protect SRB-E models simplify the use of safety relay modules. At the same time, they enhance their potential use in areas where flexibility is particularly important.

This makes them a real alternative to (compact) safety controllers when, for example, there are safety functions which are difficult to oversee on individual

packaging machines or stations. Schmersal also offers two more series for more comprehensive functions in terms of safe signal evaluation: the compact safety controllers in the Protect-Select range and the Protect PSC1 safety controller.

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With a total of just eight variants, the new SRB-E range of safety relay modules from Schmersal covers a wide range of applications.