

New optoelectronic safety devices

One series, many functionalities

The new SLC/ SLG 440 safety light grids and safety light curtains presented by Schmersal at SPS/ IPC/ DRIVES, gather many functions in one series. The user can, for instance, realise different blanking functions and activate a double acknowledgment, which provides for a higher degree of safety on blind, vast or complex hazardous areas.

When developing the SLC/SLG 440 series, the main objective of the engineers from Schmersal's Centre of Competence for Optoelectronics located at Mühlendorf/ Inn was to design a single series covering as many applications as possible. In this way, the stock-keeping is reduced for the user, considering that he can use only those functions needed for the individual application. Otherwise said: the flexibility feature simplifies the selection of the optoelectronic safety device.

Compact design

To that effect, a fundamental redesign was required, particularly in view of the fact that other features were to be integrated and additional requirements had to be met, such as a compact profile form, the use of resource-saving materials and a minimised energy demand.



Image 1
 "One series for all and any applications": at SPS/IPC/ DRIVES, Schmersal presented the new multifunctional SLC/ SLG 440 safety light grids and light curtains.

What does the result of the new development, which was presented for the first time at SPS/ IPC/ DRIVES, look like in actual practice? The new type 4 SLC/SLG 440 safety light curtains and light grids (image 1) are adequately protected in the newly constructed sensor profile of only 28 x 33. This enables their perfect integration, even in confined mounting spaces.

Different variants for the object blanking

By activating different functions through the man-machine interface, the user of the new safety light curtains can preselect a fixed blanking and floated blanking of objects in a simple manner. With this function, individual either multiple light beams of the safety light curtain can be bypassed whilst all normative requirements are fulfilled. Depending on the application, e.g. during metal forming, a fixed object blanking with variable edge area and a floating object blanking (which is for instance useful for bending processes) is possible.

Double acknowledgment for complex hazardous areas

The new SLC/ SLB 440 series integrates, amongst other things, a double acknowledgment feature. This function is advantageous in the absence of a clear view over the hazardous area, for instance in case of robotised applications. The user, who is responsible for restarting the plant, first must press a button in the hazardous area and subsequently, within a defined period of time, a button located outside of the hazardous area. In this way, he acknowledges that he has left the hazardous area and that the plant can be



Image 2
 The new PROTECT SELECT compact safety controller is supplied with different preconfigured application programmes, amongst other a programme for muting applications.

restarted. By means of the double acknowledgment, it is avoided that an operator can start the plant from outside of the hazardous area when another person is still inside of the hazardous area.

Smooth selection of the desired functions

The individual functions are activated in parameter setting mode. The 7-segment display proposes a selection, which can be smoothly selected and saved into the system by means of a command device (pushbutton) without the need to use any PC software whatsoever. The contactor control (EDM) as well as the functions "automatic mode", "restart mode" and "set-up mode" are default features of the series. In set-up mode, the signal strength at the receiver is evaluated with a basic and fine setting, which enables an optimal alignment of the sensors.

Also for high safety requirements

The SLC 440 series for hazardous area protection is available with a resolution of 14 and 30 mm for protection field heights from 170 to 1770 mm. For the area and zone protection, the SLG 440 safety light grids are available with protection field heights from 500 to 900 mm and ranges up to 12 m. With both series, safety circuits up to PL e (EN 13849) or SIL 3 (EN 62061) can be designed.

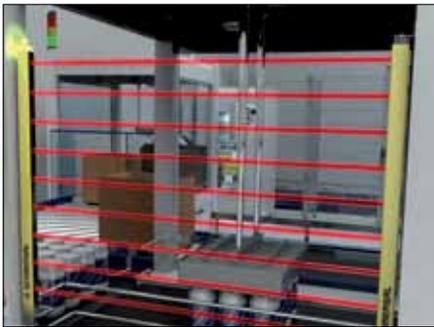


Image 3
The PROTECT SELECT application programme with muting function was especially developed for material conveyance areas.

Practice-oriented construction

The new safety light curtains and light grids feature practice-oriented innovations, not only at "electronic" level, but also as their fitting is regarded. The mounting kit with mounting brackets, which is included in delivery, provides for a comfortable alignment of the sensors as well as a high stability in case of vibrations. In this way, the required availability is ensured even when the devices are exposed to high solicitations - as applicable in the field of metal forming for instance. The integrated set-up tool provides the fitters with the necessary support and considerably reduces the set-up time.

Safe signal evaluation: closing the gap between safety-monitoring modules and safety control systems

For the signal evaluation, the new PROTECT SELECT compact safety controllers (image 2) are available in addition to the conventional safety-monitoring modules. These systems, which were introduced by Schmersal at SPS/ IPC/ DRIVES as well, close the gap between the safety-monitoring modules and the full-grade programmable safety-related control systems. They can replace up to eight conventional safety-monitoring modules (up to

PL e and SIL 3); with their mounting width of only 52.5 mm, they only require little space in the control cabinet.

Application programme for muting applications

The PROTECT SELECT can be put into service without knowledge of programming and can be adjusted to the individual circumstances by navigation through the menus of the plain-text colour screen. In addition to that, four preconfigured application programmes are installed, covering approximately 80% of all applications. One of the four programmes has been developed especially for optoelectronic safety devices requiring the use of the



Image 4
For very special requirements – including hygiene-sensitive areas with IP 69K components – individual series are still available.

muting function (image 3). This system solution features the advantage that the user can use the safety light curtains without integrated muting and control this function through the PROTECT SELECT by means of the muting sensors. Moreover, the signals of two other safety switchgear can be evaluated. In this way, the user can realise a complete muting application for instance with an additional safety guard and an emergency stop without needing other components for the safe signal evaluation.

Series for special applications

Although the new safety light curtains and light grids allow for a universal application, the safety-related optoelectronics programme from Schmersal will still include separate series, which are suitable for very particular applications, e.g. safety light curtains and light grids for hygiene-sensitive areas destined to the machinery and plants used in food production. These non-contact SLC/ SLG 420 IP69K systems with protection class IP 69 K feature a

reliable operation, even when exposed to high-pressure cleaning (image 3).

And even for extremely confined mounting spaces, an individual series is offered. In this case, the SLC 430 safety light curtains with a profile section of only 12 x 20 mm (image 4) are recommended. The Centre of Competence for Optoelectronics furthermore develops customer-specific variants and series, which accurately meet the individual requirements.



Image 5
The extremely compact SLC 430 has a profile section of only 12 x 20 mm.

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