



## Safety sensors for automation

### Intelligent and economical machine safety

Pressure of mounting costs, higher productivity demand and flexibility in terms of item quantities – these are the key factors today for the mechanical engineering and material processing industries. Dreams of the automated factory running without human agency have long been abandoned. In many fields the challenge today is that of adapting production processes in a flexible way to constantly changing design variants and batch sizes. Human beings and machines then work hand in hand, so to speak. Electrosensitive protective devices like light curtains or laser scanners with intelligent blanking or muting functions make an important contribution in this area, by ensuring maximum safety at all times without holding up the production sequence.

### Safety light curtains and multi-beam safety light barriers

Safety light curtains with a blanking function can for example phase out material transport belts or tool components, so offering seamless protection for the hands and fingers of employees while optimizing ergonomic aspects and machine accessibility. Handy teach-in functions make it possible to adapt the machine quickly and easily to various different product variants. Multi-beam safety light barriers with an integrated muting function can safeguard access to automated manufacturing cells without interrupting the continuous flow of materials or the materials handling technology. The bypass function is integrated with the sensor, so that external control devices are no longer needed.



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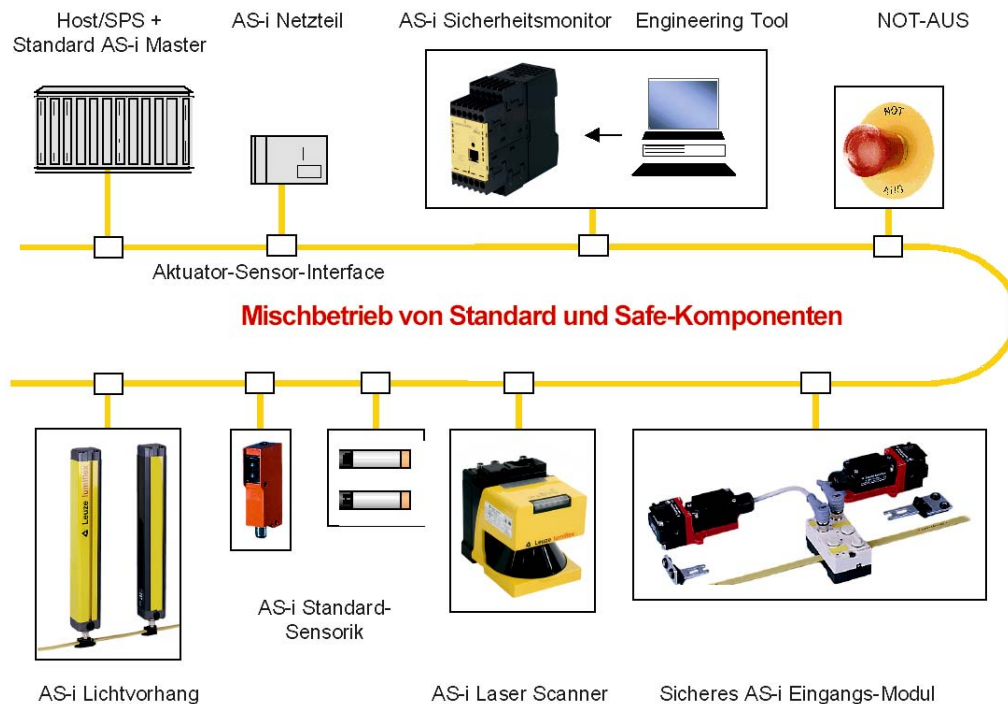
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## Safety laser scanners

Safety laser scanners monitor a two-dimensional protective field, the contours of which can be flexibly adapted to the given dimensions of the machinery with the help of the user-friendly PC software. Different protective fields can be switched while plant is operating, making it possible, for example, for new materials to be fed into the loading zone of an automated workstation while at the same time ensuring that personnel are constantly protected in the current working area of the robot, thus facilitating production sequences that are both safe and economical.

## Connection technology and integration

Correct integration of the safety technology with the machine controls, in keeping with the applicable standards, is a precondition for the failsafe function. Depending on the complexity of the machines or systems in question, the safety sensors can be connected either conventionally, on the basis of multi-channel switching outputs and safety relays, or by means of safety bus systems. Here the functionality of the sensors is supplemented by intelligent interface devices.





## Future prospects

Generally speaking we can distinguish a trend towards decentralised control strategies – that is to say, people are moving away from massive central PLC systems and centralised switch cabinets. Safety technology will here constitute an integral component. The same holds good for industrial communications. Here we find users tending to prefer Ethernet-based systems like PROFINET or Ethernet/IP. At the lowest field level AS-Interface has now succeeded in establishing itself as a *de facto* standard for the networking of binary sensors and actuators. Suitable gateways can create connections to almost all higher-level communication systems, so serving to protect investment.



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