

Rotative axis safety limit switches

Technical data

Control system categories as per EN 954-1



The main aim of all machine designers is to guarantee that the faults on safety-related control system parts or external disturbances cannot result in a dangerous situation or a dangerous event on the machine.

The summarising table below determines the category of the safety-related control system parts.

Categories	Summary of control system requirements	Control system behavior	Main principle for ensuring safety
B	The parts of the safety-related control system and / or its devices must be designed, manufactured, selected, mounted and combined according to proper procedures so as to withstand expected influences.	If a fault occurs, it may lead to possible loss of the safety function.	By selection of components conforming to relevant standards.
1	The requirements formulated in category B are combined with use of tried and tested safety components and principles.	– Occurrence of a fault may lead to possible loss of the safety function, but this is less probable than in category B.	By choice and use of safety components and principles.
2	The requirements formulated in category B and use of tried and tested safety principles apply. The safety function(s) must be tested regularly by the machine control system. Test frequency must be adapted to the machine and to its application.	– Occurrence of a fault may lead to possible loss of the safety function between the periodic test intervals. – Loss of the safety function is detected at each test.	By improvement of safety circuit structure.
3	The requirements formulated in category B and use of tried and tested safety principles apply. The control system must be designed so that: a) a single fault in the control does not lead to loss of the safety function and... (see paragraph b). b) if this is reasonably feasible, the single fault must be detected by appropriate technical means.	– When a single fault occurs, the safety function is always guaranteed. – Some faults will be detected, but not all. – Accumulation of undetected faults may lead to loss of the safety function.	By improvement of safety circuit structure.
4	The requirements formulated in category B and use of tried and tested safety principles must be applied. The control system must be designed so that: a) a single fault in the control does not lead to loss of the safety function and... (see paragraph b). b) if possible the single fault must be detected as soon as or before the next tripping of the safety function or... (see paragraph c). c) if this was not possible, an accumulation of faults must not lead to loss of the safety function.	– When faults occur, the safety function is always guaranteed. – The faults will be detected in time to prevent loss of the safety function.	By improvement of safety circuit structure.

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Important: The safety categories apply to the entire control system and not to the individually considered safety components.