

Consideration on the Sensor Type 663 acc. to ISO 13849 Part 1

This consideration is based on the FMEDA results Q 08-03-64 V2R1 and the ISO 13849 Part 1:2006.

The requirements for the classification as Category 2 with a Performance Level = d and a $MTTF_d$ of at least 100 years are fulfilled. The function of the sensor has to be tested cyclically by the machine control system.

The detailed requirements given in table 10 of the standard ISO 13849-1 are:

$MTTF_d$ = low to high (more than 100 years)

The maximum Performance Level is d.

DC: The diagnostic coverage has to be 60 - 90 % (low) or 90 – 99 % (medium).

CCF: According to ISO 13849, App. F, common cause failures have to be considered for the complete system.

The used components meet the requirements of the applicable standards and resist the expected influences. Proven safety principles are used. The safety function will be tested by the machine control system in suitable intervals and the loss of the safety function will be detected during this test.

Values for the Sensor Type 663:

Calculated data from the FMEDA results:

$MTTF_d$ = 1732 years -> high

Performance Level e with PFH = 6,59 E-08 1/h according to table 3 of ISO 13849-1.

DC: The monitoring of the sensor, cyclically performed by the machine control system, is specified according to table E.1 of ISO 13849 with a Diagnostic Coverage of 90 % (medium).

This monitoring is done by applying the appropriate signal to the ADXL PCB.

Applying this signal to the board simulates a failure and relay 1 switches to the safe condition (turned off).

CCF: Because these failures have to be considered for the complete system, the classification is in the responsibility of the end-user.

A failure in the safety function of the sensor has to be detected by the monitoring of the machine control system.



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