ifm electronic

MTTF, $MTTF_D$ Certificate

The $MTTF_D$ value indicates the mean time to a dangerous failure of component. It helps to assess the risk of dangerous failures of products.

The product designated below is no safety component-according to the machine directive 2006/42/EC, Article 2.c or regulation (EU) 2023/1230, Article 3, paragraph 3. If the product is implemented in safety functions, the integrator is responsible for its correct implementation according to current safety standards.

Basis of reliability calculation

Basis for the calculation of $MTTF_D$ of the electronic components is ISO 13849-1, Annex C.5 and D.1 as well as IEC 61709 for the use of failure rate data from SN29500. The following formulas are applied:

$$\boldsymbol{MTTF} = \sum_{i=1}^{n} \frac{1}{(\lambda_{ref})_i} \qquad MTTF_D = MTTF * 2$$

If electromechanical components are inside, a B_{10D} value is stated as sum of individual manufacturer data. The $MTTF_D$ calculation should be done by the integrator according to the annual operation.

Calculation conditions: Ambient temperature $\theta_0 = 40°C\ (104°F)$; Environmental application conditions similar to the technical data.

Declaration

Declaration date: 30.04.2026

Product	**MTTF** [1] (years)	**$MTTF_D$** [1] (years)	**B_{10d}** [2] (cycles)	**DC** (%)
MR0901	9434	18868	20000000	not applicable

1) For all electronic components at reference condition
2) For all electromechanical components

A mission time of up to 20 years for the product can be achieved if the requirements for Category B according to ISO 13849-1 are met by the integrator.
The Product quality management is much more than just compliance with ISO 9001. With ifm standards, quality criteria and testing processes, the basic safety principles according to ISO 13849-2 are achieved, insofar as applicable to this product.

By applying product and ifm standards, well-tried safety principles according to ISO 13849-2 are also met, insofar as applicable to this product.
Excluded are:

- **Over-dimensioning:** The integrator shall observe mechanical and electrical limits in the technical data sheet and, where relevant to the function, apply appropriate safety factors. (e.g. limitation of the power supply and use of a higher measuring range)
- **Safe position:** The integrator shall ensure secure fixing.

The status to avoid faults during the software lifecycle of embedded software in this product is:

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