

In compliance with:

CEN ISO 13849-1:2015

Safety of machinery, safety related parts of control systems

Part 1: general principles of design

MTTFd KSE Series

B10d rating based on the calculated assumptions below is:-

= 1,000,000 cycles

Calculation data assumptions (CEN ISO 13849-1:2015. Annex C):

≡ **Performance Level e (CEN ISO 13849-1. Table 2)**

≡ **Safety Integrity Level 3 (CEN ISO 13849-1. Table 3)**

≡ **MTTFd denotation HIGH (CEN ISO 13849-1. Table 4)**

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|---------------------------------------------------------------------------------------|---------------------------------|
| t_{cycle} , mean time between two successive cycles | 3600 seconds (1 cycle per hour) |
| h_{op} , mean operation in hours per day | 1 shift x 8 hours. |
| d_{op} , mean operation in days per year | 220 days. |
| $n_{\text{op}} = (d_{\text{op}} \times h_{\text{op}} \times 3600) / t_{\text{cycle}}$ | 1760 mean annual operations |
| B10d no. cycles until 10% of components fail dangerously | 1,000,000 cycles |
| $MTTFd = B10d / (0.1 \times n_{\text{op}})$ | 5,682 years |
| $\lambda_d = (0.1 \times n_{\text{op}}) / (B10d)$ | 2.01 E-08 per operating hour |

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