

In compliance with:

## **CEN ISO 13849-1:2015**

Safety of machinery, safety related parts of control systems

Part 1: general principles of design

### **MTTFd MSI 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)**

$t_{\text{cycle}}$ , mean time between two successive cycles	3600 seconds (1 cycle per hour)
$h_{\text{op}}$ , mean operation in hours per day	1 shift x 8 hours.
$d_{\text{op}}$ , 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
$MTTFd = B10d / (0.1 \times n_{\text{op}})$	5,68 years
$\lambda_d = (0.1 \times n_{\text{op}}) / (B10d)$	2.01 E-08 per operating hour

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Head of Compliance

