



The manufacturer may use the mark:



Revision 1.0 January 25, 2019  
Surveillance Audit Due  
February 1, 2022



ISO/IEC 17065  
PRODUCT CERTIFICATION BODY  
#1004

# Certificate / Certificat Zertifikat / 合格証

MEG 1808012 C001

*exida* hereby confirms that the:

## TQ4xx / EA4xx / IQS45x Proximity Measurement System

**Meggitt SA  
Fribourg, Switzerland**

Has been assessed per the relevant requirements of:

**IEC 61508 : 2010 Parts 1-7**

and meets requirements providing a level of integrity to:

**Systematic Capability: SC 2 (SIL 2 Capable)**

**Random Capability: Type A Element**

**SIL 2 @ HFT=0, Low Demand; Route 2<sub>H</sub>**

**SIL 2 @ HFT=1, High Demand; Route 2<sub>H</sub>**

**PFH/PFD<sub>avg</sub> and Architecture Constraints  
must be verified for each application**

### Safety Function:

The TQ4xx / EA4xx / IQS45x senses the proximity of a vibrating/moving object to the sensor, conditions the signal and outputs a current or voltage proportional to the proximity measurement within the published safety accuracy.

### Application Restrictions:

The unit must be properly designed into a Safety Instrumented Function per the Safety Manual requirements.



Evaluating Assessor

Certifying Assessor

MEG 1808012 C001

**Systematic Capability: SC 2 (SIL 2 Capable)**

**Random Capability: Type A Element**

**SIL 2 @ HFT=1, Low Demand; Route 2<sub>H</sub>**

**SIL 2 @ HFT=1, High Demand; Route 2<sub>H</sub>**

**PFH/PFD<sub>avg</sub> and Architecture Constraints  
must be verified for each application**

TQ4xx / EA4xx / IQS45x  
Proximity Measurement  
System

**Systematic Capability:**

The Product has met manufacturer design process requirements of Safety Integrity Level (SIL) 2. These are intended to achieve sufficient integrity against systematic errors of design by the manufacturer.

A Safety Instrumented Function (SIF) designed with this product must not be used at a SIL level higher than stated.

**Random Capability:**

The SIL limit imposed by the Architectural Constraints must be met for each element. This Device meets *exida* criteria for Route 2<sub>H</sub>.

**IEC 61508 Failure Rates in FIT \***

Application/Device/Configuration	$\lambda_{SD}$	$\lambda_{SU}$	$\lambda_{DD}$	$\lambda_{DU}$
Current	0	20	0	105
Voltage	0	18	0	101
Current, external diagnostic	0	20	86	19
Voltage, external diagnostic	0	18	82	19

\* FIT = 1 failure / 10<sup>9</sup> hours

**SIL Verification:**

The Safety Integrity Level (SIL) of an entire Safety Instrumented Function (SIF) must be verified via a calculation of PFH/PFD<sub>avg</sub> considering redundant architectures, proof test interval, proof test effectiveness, any automatic diagnostics, average repair time and the specific failure rates of all products included in the SIF. Each element must be checked to assure compliance with minimum hardware fault tolerance (HFT) requirements.

The following documents are a mandatory part of certification:

**Assessment Report:** MEG 18-08-012 R001 V1R0

**Safety Manual:** Manual\_TQ4xx\_safety-en



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