

# CERTIFICATE



PREI 070902 P0002 C03.3

exida Certification S.A. hereby confirms that the

## 9113 Temperature / mA Converter

Product Version 9113-002

### PR electronics AS

Rønne, Denmark

Has been assessed per the relevant requirements of

## IEC 61508

Parts 1 - 7, and meets requirements providing a level of integrity to

**Systematic Integrity : SIL 2 Capable**

**Random Integrity : SIL 2 Capable**

### Safety Function

The 9113 Temperature / mA Converter shall convert various sensor input signals from hazardous areas to a 4..20 mA current output signal.

### Application Restrictions

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



Assessor



Certifying Assessor

Date: 23 April 2010

exida Certification SA, Nyon, Switzerland



## Systematic Integrity: SIL 2 Capable

### SIL 2 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 the statement without "prior use" justification by end user or diverse technology redundancy in the design.

## Random Integrity: SIL 2 Capable

### Summary for 9113 Temperature / mA Converter

#### Type B device,

#### IEC 61508 failure rates:

Failure category	Failure rates [FIT=10 <sup>-9</sup> /h]
Fail Safe ( $\lambda_{SAFE}$ )	234
Fail Dangerous Detected ( $\lambda_{DD}$ )	367
Fail Dangerous Undetected ( $\lambda_{DU}$ )	61
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Total failure rate (safety function)	662 FIT
SFF	90.7%
DC <sub>D</sub>	85.7%
MTBF	111 years

### SIL Verification:

The Safety Integrity Level (SIL) of an entire Safety Instrumented Function (SIF) must be verified via a calculation of 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 subsystem must be checked to assure compliance with minimum hardware fault tolerance (HFT) requirements.

### The following documents are mandatory parts this certificate:

PR electronics 0709-02-C R012 V1R4 Assessment report.

9113 Safety Manual V4R0

The holder of this certificate  
may use this mark.

