

# CERTIFICATE



PREI 070902 P0002 C06

exida Certification S.A. hereby confirms that the

## 9106 HART transparent repeater

Product Version 9106-002

### PR electronics AS

Rønde, Denmark

Has been assessed per the relevant requirements of

## IEC 61508:2000

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

**Systematic Integrity : SIL 3 Capable**

**Random Integrity : SIL 2 Capable, single in/output  
SIL 3 Capable, dual in/output**

#### **Safety Function**


The 9106 HART transparent repeater isolates 4-20 mA process signals and realizes a ground loop elimination.

#### **Application Restrictions**

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



Assessor



Certifying Assessor

Date: 19 March 2012

exida Certification SA, Nyon, Switzerland



## Systematic Integrity: SIL 3 Capable

### SIL 3 Capability

The product has met manufacturer design process requirements of Safety Integrity Level (SIL) 3. 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.

## Random Integrity: SIL 2 Capable, single in/output SIL 3 Capable, dual in/output

### Summary for the 9106 HART transparent repeater

#### Type A device

#### IEC61508 failure rates

9106 configurations	SIL	$\lambda_{safe}$	$\lambda_{dd}$	$\lambda_{du}$	SFF	DC <sub>D</sub>	MTBF
Single active input and active output	SIL2	177	173	41	89%	80%	103y
Single active input and passive output	SIL2	177	174	41	89%	80%	103y
Single passive input and active output	SIL2	164	160	40	89%	80%	103y
Single passive input and passive output	SIL2	165	160	41	88%	79%	103y
Dual active input and dual active output	SIL3	315	377	11	98%	97%	59y
Dual active input and dual passive output	SIL3	316	376	11	98%	97%	60y
One passive input and one active input and dual active output	SIL3	304	363	11	98%	97%	59y
One passive and one active input and dual passive output	SIL3	305	363	11	98%	97%	59y

All failure rates are given in FIT=10<sup>-9</sup>/h

### 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 R016 V1R0 Assessment report.

9106 Safety Manual V1R0

The holder of this certificate  
may use this mark.

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