

# CERTIFICATE



PREI 070902 P0002 C01.4

exida Certification S.A. hereby confirms that the

## Pulse Isolator 9202

Product Version 9202-001

## PR electronics AS

Rønde, 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 9202 - Pulse Isolator provides EX-isolation of digital signals, on/off converter for NAMUR sensors or mechanical switches, between hazardous areas and safe areas.

### 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 Pulse Isolator 9202, Relay output – Type B device, IEC 61508 failure rates:

Failure category	Failure rates [FIT=10 <sup>-9</sup> /h]
Fail Safe ( $\lambda_{SAFE}$ )	289.1
Fail Dangerous Detected ( $\lambda_{DD}$ )	130.3
Fail Dangerous Undetected ( $\lambda_{DU}$ )	46.58
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Total failure rate (safety function)	466 FIT
SFF	90%
DCD	74%
MTBF	209 years

### Summary for Pulse Isolator 9202, Opto output – Type B device, IEC 61508 failure rates:

Failure category	Failure rates [FIT=10 <sup>-9</sup> /h]
Fail Safe ( $\lambda_{SAFE}$ )	274.9
Fail Dangerous Detected ( $\lambda_{DD}$ )	135.6
Fail Dangerous Undetected ( $\lambda_{DU}$ )	36.18
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Total failure rate (safety function)	447 FIT
SFF	91%
DCD	79%
MTBF	217 years

### SIL Verification:

The Safety Integrity Level (SIL) of an entire Safety Instrumented Function (SIF) must be verified via a calculation of  $PFD_{AVG}$  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 R003 V1R3 Assessment report.  
9202 Safety Manual V2R0

The holder of this certificate  
may use this mark.

exida Certification SA, Nyon, Switzerland

