

CERTIFICATE



PREI 070902 P0002 C05

exida Certification S.A. hereby confirms that the

9116 Universal Converter

Product Version 9116-001

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 9116 Universal Converter converts various sensor input signals from hazardous areas to a 4..20 mA current output signal. An additional safety related output relay is available.

Application Restrictions

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



Assessor



Certifying Assessor

Date: 6 July 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 the 9116 Universal Converter

Type B device

IEC61508 failure rates

9116 Universal Converter, configurations	λ_{safe}	λ_{dd}	λ_{du}	SFF	DC _D
Resistance / RTD temperature / TC temperature inputs, Current output	278	352	43	93%	89%
Resistance / RTD temperature / TC temperature inputs, Relay output	359	230	62	90%	79%
Current input, Current output	444	554	42	95%	93%
Current input, Relay output	636	320	62	93%	83%
Voltage input, Current output	395	479	56	93%	89%
Voltage input, Relay output	480	353	76	91%	82%

All failure rates are given in FIT=10⁻⁹/h
MTBF = 74 years for all configurations.

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 R014 V1R0 Assessment report.
9116 Safety Manual V1R0

The holder of this certificate
may use this mark.