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Certificate / Certificat

Zertifikat / 合格証

NI 1503025 C001

exida hereby confirms that the:

C Series Functional Safety Modules:
NI 9350, NI 9351

National Instruments
Austin, TX, USA

Has been assessed per the relevant requirements of:

IEC 61508:2010 Parts 1-7
IEC 62061:2005+AMD1:2012+AMD2:2015

and meets requirements providing a level of integrity to:

Systematic Capability: SC 3 (SIL 3 Capable)
Random Capability: Type B Element

SIL 3 @ HFT=0; Route 1_H

Therefore, they can be used as part of a safety instrumented system as per 61511. PFH/PFD_{avg} and Architecture Constraints must be verified for each application

Safety Function:

The NI 9350 and 9351 Logic Modules will read their analog/digital inputs and set the safety digital outputs when commanded by the online onboard logic solver within the specified time period.

Application Restrictions:

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

Evaluating Assessor

Certifying Assessor

The manufacturer may use the mark:

Revision 2.0 June 30, 2018
Surveillance Audit Due
September 1, 2020

ANSI Accredited Program
ISO/IEC 17065
PRODUCT CERTIFICATION BODY
#1004

Certificate / Certificat / Zertifikat / 合格証

NI 1503025 C001

Systematic Capability: SC 3 (SIL 3 Capable)

Random Capability: Type B Element

SIL 3 @ HFT=0; Route 1_H

Therefore, they can be used as part of a safety instrumented system as per 61511. PFH/PFD_{avg} and Architecture Constraints must be verified for each application.

C Series Functional Safety Modules: NI 9350, NI 9351

Systematic 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 stated.

Random Capability:

The SIL limit imposed by the Architectural Constraints must be met for each element.

IEC 61508 Failure Rates in FIT*

NI 9350 Failure Categories	λ_{SD}	λ_{SU}	λ_{DD}	λ_{DU}
Common, sea level	419	10	282	10
Common, 2000m	858	11	720	10
Common, 5000m	4100	14	3970	13
DI Common	7	0	19	0
DI per Channel	14	2	15	1
DO per Channel	39	1	0	0
AI Common	70	1	110	1
AI per Channel	1	0	1	0

* FIT = 1 failure / 10^9 hours

SIL Verification:

The Safety Integrity Level (SIL) of an entire Safety Instrumented Function (SIF) must be verified via a calculation of PFH/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 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:

NI 15-03-025 R003 V2R0 IEC 61508 Assessment Report 9350_9351

Safety Manual:

377937C-01 May 2018

80 N Main St
Sellersville, PA 18960