Certificate / Certificat
Zertifikat / 合格証

EPRO 1507123 C001

exida hereby confirms that the:

CSI 6500 SIS Digital Protection System

Emerson Epro, GmbH
Gronau - Germany

Has been assessed per the relevant requirements of:

IEC 61508 : 2010   Parts 1-7

and meets requirements providing a level of integrity to:

Systematic Capability: SC 1 (SIL 1 Capable)

Random Capability: Type B Element

SIL 1 @ HFT=0; Route 2_H

PFD_{AVG} and Architecture Constraints must be verified for each application

Safety Function:
The CSI 6500 is a logic solver that may be configured to implement various safety functions as described in the safety manual. It has special purpose input modules and relays outputs that allow protection against vibration, shaft displacement/position, speed and wrong direction hazards.

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:

Valid until October 1, 2018
Revision 1.1 September 30, 2015

ANSI Accredited Program
PRODUCT CERTIFICATION
#1004

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Systematic Capability: SC 1 (SIL 1 Capable)

Random Capability: Type B Element

SIL 1 @ HFT=0; Route 2_H

**PFD_{AVG} and Architecture Constraints
must be verified for each application**

CSI 6500 SIS Digital Protection System

Systematic Capability:

The Product has met manufacturer design process requirements of Safety Integrity Level (SIL) 1. 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. This Device meets *exida* criteria for Route 2_H.

IEC 61508 Failure Rates in FIT*

Device	λ_{SD}	λ_{SU}	λ_{DD}	λ_{DU}
per A6110 Module per SIF	350	119	259	123
per Active A6110 Input Sensor per SIF	21	114	57	120
per A6120 Module per SIF	350	119	259	123
per Active A6120 Input Sensor per SIF	26	139	47	129
per A6125 Module per SIF	350	119	259	123
per Active A6125 Input Sensor per SIF	26	162	47	165
per A6210 Module per SIF	350	119	259	123
per Active A6210 Input Sensor per SIF	21	86	34	41
per A6312 Module per SIF	179	162	72	272
per Active A6312 Input Sensor per SIF	22	91	4	58
per A6740 Module per SIF	169	60	58	60
per Active A6740 Output Relay per SIF	0	39	0	33

* 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 PFD_{AVG} or PFH 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: EPRO 15-07-123 R002 V1R0

Safety Manual: MHM-97872