



Certificate / Certificat Zertifikat / 合格証

GE 081057 C001

exida hereby confirms that the:

Mark* Vle PPRA Protection Module

* Trademark of General Electric company

**General Electric
Salem, VA - USA**

The manufacturer
may use the mark:



Has been assessed per the relevant requirements of:

IEC 61508 : 2010 Parts 1-7

EN 50402:2005+A1:2008

and meets requirements providing a level of integrity to:

Systematic Capability: SC 3 (SIL 3 Capable)

Random Capability: Type B Element

SIL 2 or SIL 3 @ HFT = 1; Route 1_H

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

Revision 3.0 December 15, 2022
Surveillance Audit Due
December 1, 2025

Safety Function:

The Mark* Vle PPRA Protection Module measures turbine shaft speed and provides a hardware trip function.

Application Restrictions:

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



Evaluating Assessor

Certifying Assessor

Systematic Capability: SC 3 (SIL 3 Capable)

Random Capability: Type B Element

SIL 2 or SIL 3 @ HFT = 1; Route 1_H

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

Mark VIe PPRA
Protection Module

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.

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, SIS application, 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.

For detailed information on failure rates of the PPRA Protection Module see exSILentia, the *exida* SERH, or the Markov Model Analysis Report and FMEDA spreadsheet available from the manufacturer.

The following documents are a mandatory part of certification:

Assessment Report: GE 08-10-57 R003 V4R1

Safety Manual: GEI-100709, Dec-2016 and later

