



Certificate / Certificat Zertifikat / 合格証

GE 1205045 C001

exida hereby confirms that the:

Mark* Vle PPRO Protection Module

* Trademark of General Electric company

**General Electric
Salem, VA - USA**

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 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**

Safety Function:

The Mark Vle PPRO 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.

The manufacturer may use the mark:



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



Evaluating Assessor

Certifying Assessor

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Random Capability: Type B Element

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

**PFD_{AVG} and Architecture Constraints
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Mark VIe PPRO
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 subsystem must be checked to assure compliance with minimum hardware fault tolerance (HFT) requirements.

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



80 N Main St
Sellersville, PA 18960

The following documents are a mandatory part of certification:

Assessment Report: GE 12-05-045 R001 V3R1

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