Certificate / Certificat
Zertifikat / 合格証

PFE 1707047 C001

exida hereby confirms that the:

PF3100 Burner Control System

Profire Energy, Inc.
Acheson, AB - Canada

Has been assessed per the relevant requirements of:

IEC 61508 : 2010 Parts 1-3

and meets requirements providing a level of integrity to:

Systematic Capability: SC 2 (SIL 2 Capable)

Random Capability: Type B Element

SIL 2 @ HFT = 0; Route 1_H

PFH/PFD_{avg} and Architecture Constraints must be verified for each application

Safety Function:

The PF3100 monitors and controls a burner using a pre-defined operating sequence. The PF3100 also monitors flame status and other interlock signals and transitions to Safety Shutdown (Lockout) if conditions are judged to be unsafe.

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 2.3 Sept 18, 2024
Surveillance Audit Due November 1, 2024

ANSI National Accreditation Board ACCREDITED ISO/IEC 17065 PRODUCT CERTIFICATION BODY #1004

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Systematic Capability: SC 2 (SIL 2 Capable)

Random Capability: Type B Element

SIL 2 @ HFT=0; Route 1_H

PFH/PFD_{avg} and Architecture Constraints must be verified for each application

PF31xx Burner Control System

Systematic 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 stated.

Random Capability:

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

Device	λ_{SD}	λ_{SU}	λ_{DD}	λ_{DU}
PF3101-00 BMS Card - Common	3042	533	3593	56
PF3101-00 BMS Card – 4-20mA Input	4	1	15	1
PF3101-00 BMS Card – Switch Input	0	5	5	5
PF3101-00 BMS Card – Switched Output	28	1	5	0
PF3101-00 BMS Card – 4-20mA Output (not safety rated)	39	1	5	11
PF3102-00 Ion Pilot - Common	2967	36	3184	37
PF3102-00 Ion Pilot – Flame Detector	28	1	22	1
PF3102-00 Ion Pilot – 4-20mA Input	2	1	45	1
PF3102-00 Ion Pilot – Ignition Coil Driver	1	1	94	3
PF3102-00 Ion Pilot – Switched Output	33	0	55	0
PF3102-01 UV Flame (Common + Input w/o Flame Scanner)	2864	33	3514	43
PF3102-01 UV Flame – NO Discrete Output	0	48	0	4
PF3102-03 SPARK (Total)	12	0	95	1
PF3103-00 Temperature - Common	2921	31	3174	55
PF3103-00 Temperature Redundant Thermocouple Input	1	0	143	4
PF3113-00 IO Expansion - Common	2935	31	3128	36
PF3113-00 IO Expansion – 4-20mA Input	1	1	108	2
PF3113-00 IO Expansion – 4-20mA Output	39	3	27	1
PF3113-00 IO Expansion – NO Discrete Output	0	48	0	4
PF3113-00 IO Expansion – NC Discrete Output (not safety rated)	0	13	0	37

IEC 61508 Failure Rates in FIT, where 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: PFE 17-07-047 R002 V2R0 (or later)
Safety Manual: PF3100 - Product Manual (Appendix A Rev. 5.0)

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