Honeywell

Systematic Integrity: SIL3 Capable Rating for Select 7800 SERIES Controls and Flame Detectors

CERTIFICATE AGREEMENT

Safety Integrity Level (SIL) Capable ratings on controls has become increasingly important in the combustion industry as customers strive for continuous improvement in quality and safety in their applications. A product's SIL capable rating is defined as a relative level of risk reduction provided by a safety function.

We are SIL 3 capable in a properly designed Safety Instrumented System for the following controls and flame detectors. The IEC 61508 Certificate is attached.

The S7830 Expanded Annunciator has been assessed to be interference free and may be used with the RM7800[E,G,L,M], RM7838[B,C], RM7840[E,G,L,M], RM7897[A,C], RM7898[A,C].

EC7810A, EC7820A, EC7830A, EC7840L, EC7850A, RM7800[E,G,L,M], RM7830A, RM7838[A,B,C], RM7840[E,G,L,M], RM7850A, RM7888A, RM7890[A,B,C,D], RM7897[A,C] and RM7898A used with one of the following flame detectors and flame amplifiers:

a. C7008A, C7009A Flame Rod sensors with R7847B Flame Amplifier
b. C7915A infra-red sensor with R7852B Flame Amplifier
c. C7012[E,F], C7061[A,F,M], C7961[E,F], C7076[A,D,F] ultra-violet sensors with R7847C, R7861A, R7851C, R7886A Flame Amplifiers

Honeywell has completed both a fault tree analysis and a second order Failure Modes and Effects (FMEA) analysis that show there are no unsafe failures in the 7800 SERIES Controls. The FMEA results predict that the MTTFD would be infinite. Field data over the life of the product (15 plus years) supports that conclusion.

The manufacturer
may use the mark:

Valid until June 28, 2016
Revision 2.2 August 14, 2013

ANSI Accredited Program
PRODUCT CERTIFICATION
#1004

Certificate / Certificat
Zertifikat / 合格証

HCC 091038 C001

exida hereby confirms that the:

Honeywell 7800 Series Burner Control

Honeywell Combustion Controls
Golden Valley, MN 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, Route 1_H Element

SIL 3 @ HFT=0

Safety Function:
The Honeywell 7800 Series Burner Control system will control the burner according to specific pre-defined sequences. In addition the 7800 Relay Module will monitor for the presence of an acceptable flame signal or discrete inputs with transition to Safety Shutdown (Lockout) upon loss of flame or other inputs.

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

Evaluating Assessor

Certifying Assessor

Certificate / Certificat / Zertifikat / 合格証

HCC 091038 C001

Systematic Capability: SIL 3 Capable

Random Capability: Type B, Route 1_H Element:

SIL 3 @ HFT=0

Honeywell 7800 Series Burner Control

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. This element meets *exida* criteria for Route 1_H.

IEC 61508 Failure Rates in FIT*

Device	λ_{SD}	λ_{SU}	λ_{DD}	λ_{DU}	SFF
7800 Series Burner Control System using Amplifiers with Ampli-Check diagnostics	830 FIT	146 FIT	0 FIT	7 FIT	99.3%
7800 Series Burner Control System using Detectors/Amplifiers with Selfi-Check diagnostics	967 FIT	146 FIT	0 FIT	8 FIT	99.3%

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, 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.

The following documents are a mandatory part of certification:

Assessment Report: HCC 09/10-38 R002 V2 R2

Safety Manual: HON 09/10-38 R004 V1 R0

* FIT = 1 failure / 10^9 hours

64 N Main St
Sellersville, PA 18960

T-002, V3R1-3

Automation and Control Solutions
Honeywell International Inc.
1985 Douglas Drive North
Golden Valley, MN 55422
customer.honeywell.com

Honeywell

® U.S. Registered Trademark
© 2013 Honeywell International Inc.
65-0312—03 M.S. Rev. 08-13
Printed in United States