

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].

Table 1. 7800 Series Burner Controller Model and Series

RELAY MODULES				FLAME SENSORS		FLAME AMPLIFIERS	
MODEL	SERIES	MODEL	SERIES	MODEL	SERIES	MODEL	SERIES
RM7800	9	RM7895	6	C7008A	1	R7847B	4
RM7824	4	RM7896	6	C7009A	1		
RM7830	5	RM7897	6				
RM7838	9	RM7898	6	C7915A	1	R7852B	1
RM7840*	8						
RM7845	3	EC7820	7	C7012E	1	R7824C	2
RM7850	5	EC7830	6	C7012F	1	R7847C	4
RM7865	4	EC7840	5	C7024E	7	R7851C	1
RM7885	5	EC7850	6	C7024F	5	R7861A	1
RM7888	5	EC7890	5	C7061A	1	R7886A	2
RM7890	9	EC7895	5	C7061F	1		
				C7076A	1		
				C7076D	1		
				C7961E	1		
				C7961F	1		

*NOTE: RM7840E1016, RM7840L1018 and RM7840L1026 are Series 5

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.

To review the full testing procedures and analysis performed to secure a SIL3 capable rating go to:
www.exida.com/SAEL
 Click on FUNCTIONAL SAFETY
 Search for Honeywell 7800





The manufacturer may use the mark:



Revision 1.1 June 30, 2018
Surveillance Audit Due
January 1, 2021



ANSI Accredited Program
ISO/IEC 17065
PRODUCT CERTIFICATION BODY
#1004

Certificate / Certificat Zertifikat / 合格証

HCC 1702010 C001

exida hereby confirms that the:

Honeywell 7800 Series Burner Controller
Honeywell International Inc.
Honeywell Thermal Solutions
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 Element

SIL 3 @ HFT = 0; Route 1_H

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

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 hardwired 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

Honeywell 7800 Series
Burner Control

Certificate / Certificat / Zertifikat / 合格証

HCC 1702010 C001

Systematic Capability: SC 3 (SIL 3 Capable)

Random Capability: Type B Element

SIL 3 @ HFT=0; Route 1_H

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

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.

IEC 61508 Failure Rates in FIT*

Device	SD	SU	DD	DU
7800 Series Burner Control System	286	31	277	5

* FIT = 1 failure / 10⁹ 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:

HON 17-02-010 R002 V1R2 IEC 61508 Assessment Report - 7800

Safety Manual:

RM 7800 Burner Controller Safety Manual, V2R0



80 N Main St
Sellersville, PA 18960

T-002, V5R1

For More Information

The Honeywell Thermal Solutions family of products includes Honeywell Combustion Safety, Eclipse, Exothermics, Hauck, Kromschröder and Maxon. To learn more about our products, visit ThermalSolutions.honeywell.com or contact your Honeywell Sales Engineer.

Honeywell Process Solutions

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