



Certificate / Certificat Zertifikat / 合格証

MDI 1810101 C001

exida hereby confirms that the:

Valve Position Transmitters

**Moniteur Devices, Inc.
Cedar Grove, NJ - USA**

The manufacturer
may use the mark:



Series/Configurations listed in the Versions table on Page 2
have 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 A Element

SIL 2 @ HFT = 0; SIL 3 @ HFT = 1; Route 2_H

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

Safety Function:

The Switchbox Sensor/Switch Output will change when the
attached Valve moves to the Switchbox's preset position.

Application Restrictions:

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

Revision 1.0 June 5, 2020
Surveillance Audit Due
June 1, 2023



ISO/IEC 17065
PRODUCT CERTIFICATION BODY
#1004



Brad Ritshank

Evaluating Assessor

[Signature]

Certifying Assessor

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Systematic Capability: SC 3 (SIL 3 Capable)

Random Capability: Type A Element

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

Systematic Capability :

These products have 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 2_H.

Versions:

Series	Code	Part Number Suffix	Switch Type (Switch Code)	Switch Qty
Sentinel	A	XSIL	SPDT, Mechanical (1, C, 10)	1 to 6
Sentinel-S3	S	(none)	SPDT Gold Plated, Mechanical (3, 30)	
Sentinel-II	C	(none)	DPDT Mechanical (4, 40)	
Watchman	F	XSIL	SPDT Tungsten, Proximity (2, 21, 22)	
Watchman-II	H	XSIL	SPDT Tungsten HV, Proximity (E, 21, 22)	
Survivor	P	XSIL	SPST Rhodium, Proximity (7, 70, 71)	
Survivor-II	Q, R	(none)	SPDT Rhodium, Proximity (T, T0, T1) P&F NJ2-V3, Inductive (8, 80)	
Companion	X	(none)	SPDT Tungsten, Proximity (2, 21, 22) SPDT Tungsten HV, Proximity (E, 21, 22) SPDT Rhodium, Proximity (T, T0, T1)	1 to 2

FMEDA Group	Switch Description	Applicable Switch Codes
Group 1	Proximity Inductive Sensors	8, 80
	MicroSwitches and Proximity Reed Switches, rated up to 3 Amps and external Current Limiting / Protection	2, 21, 22, 3, 30, E, 7, 70, 71, T, T0, T1
Group 2	MicroSwitches (Applications with Switches rated up to 15 Amps)	1, C, 10, 4, 40
Group 3	Companion Series, Proximity Reed Switches rated up to 3 Amps and external Current Limiting / Protection	2, 21, 22, E, T, T0, T1

IEC 61508 Failure Rates in FIT¹

Application/Device/Configuration	λ _{SD}	λ _{SU}	λ _{DD}	λ _{DU}	#
Group 1 – NAMUR Proximity Sensors, MicroSwitches ² , or Proximity Reed Switches ²	0	22	0	83	48
Group 2 – MicroSwitches (Applications with Switches rated up to 15 Amps)	0	18	0	119	51
Companion Series, Proximity Reed Switches ² rated up to 3 Amps	0	5	0	23	15

¹ FIT = 1 failure / 10⁹ hours

² Failure rates listed are only applicable if the switch contacts current is limited to 60% of the switches rated capacity and the end user has added external transient protection if being used with non-resistive loads.

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: MDI 18/10-101 R002 V1 R1 (or later)

Safety Manual: SIL Safety Manual Rev A (or later)

Valve Position Transmitters



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