



# Certificate / Certificat Zertifikat / 合格証

GEO 1704048 C001

*exida* hereby confirms that the:

## P2oo2 Trip Manifold Assembly (TMA)

**Nexus Controls LLC  
Longmont, CO - USA**

The manufacturer  
may use the mark:



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 A, Route 2<sub>H</sub> Device**

**PFH/PFD<sub>avg</sub> and Architecture Constraints  
must be verified for each application**

Revision 1.2 May 24, 2020  
Surveillance Audit Due  
August 1, 2022

### Safety Function:

The Trip Manifold Assembly will connect the supply header to the drain header within the specified safety time.

### Application Restrictions:

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



Evaluating Assessor

Certifying Assessor

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**Systematic Capability: SC 3 (SIL 3 Capable)****Random Capability: Type A, Route 2<sub>H</sub> Device****PFH/PFD<sub>avg</sub> 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. This device meets *exida* criteria for Route 2<sub>H</sub>.

**IEC 61508 Failure Rates in FIT\*****Table 1 Failure rates with No Online Testing**

Component	$\lambda_{SD}$	$\lambda_{SU}^1$	$\lambda_{DD}$	$\lambda_{DU}$
<b>Electronic Trip Device</b>				
Solenoid	0	377	0	122
Cartridge Valve	0	84	0	31

**Table 2 Failure rates with Online Testing**

Component	$\lambda_{SD}$	$\lambda_{SU}$	$\lambda_{DD}$	$\lambda_{DU}$
<b>Electronic Trip Device</b>				
Solenoid	377	0	110	12
Cartridge Valve	0	84	0	31

\* FIT = 1 failure / 10<sup>9</sup> hours

† PVST = Partial Valve Stroke Test of a final element Device

**SIL Verification:**

The Safety Integrity Level (SIL) of an entire Safety Instrumented Function (SIF) must be verified via a calculation of PFH/PFD<sub>avg</sub> 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:** GEO 17/04-048 R002 V1 R2 (or later)

**Safety Manual:** GECS10058



80 N Main St  
Sellersville, PA 18960

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