



The manufacturer  
may use the mark:



Revision 2.2 September 8, 2016  
Surveillance Audit Due  
October 1, 2019



ANSI Accredited Program  
PRODUCT CERTIFICATION  
#1004

# Certificate / Certificat Zertifikat / 合格証

VEGA 1202050C P0011 C004

*exida* hereby confirms that the:

## Radiation-based Transmitters PROTRAC 30 Series

**VEGA Grieshaber KG  
Schiltach - Germany**

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 2 (SIL 2 Capable)**

**Random Capability: Type B Element**

**SIL 2 @ HFT = 0; Route 1<sub>H</sub>**

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

### Safety Function:

The PROTRAC 30 Series Transmitter will measure the level of the process material within the stated safety accuracy.

### 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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VEGA 1202050C P0011 C004

**Systematic Capability: SC 2 (SIL 2 Capable)**

**Random Capability: Type B Element**

**SIL 2 @ HFT = 0; Route 1<sub>H</sub>**

**PFD<sub>AVG</sub> and Architecture Constraints  
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PROTRAC 30 Series  
Transmitter

## Systematic Capability:

These Products have 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 these products 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.

## Versions:

Applications with continuous level measurement and level limit detection of liquids and bulk solids.  
Hardware version 1.0.6 and Software version 2.0.0

## Single or Master devices:

C1 – Point Level PT31, MT31, MT32 using relay output (MIN/MAX)

C2 – Point Level PT31, MT31, MT32 using 8/16mA current output (MIN/MAX)

C3 – Level MT31, MT32, FT31/32, ST31 (short) using 4..20mA current output (MIN/MAX/RANGE)

C4 – Level FT31/32, ST31 (long) using 4..20mA current output (MIN/MAX)

## Slave devices:

C5 – Level FT31/32, ST31 (short scintillator) (MIN/MAX/RANGE)

C6 – Level FT31/32, ST31 (long scintillator) (MIN/MAX)

| Configuration                                | $\lambda_S$ | $\lambda_{DD}$ | $\lambda_{DU}$ | $\lambda_H$ | $\lambda_L$ | $\lambda_{AD}$ | $\lambda_{AU}$ |
|--|-------------|----------------|----------------|-------------|-------------|----------------|----------------|
| C1: MIN/MAX limit detection                  | 458         | 1097           | 123            | 0           | 0           | 24             | 30             |
| C2, C3, C4: MIN/MAX limit detection          | 123         | 1413           | 125            | 12          | 71          | 86             | 11             |
| C3: Range measurement                        | 0           | 1507           | 154            | 12          | 71          | 86             | 11             |
| C5: Range measurement                        | 0           | 1466           | 149            | 0           | 0           | 19             | 2              |
| C5, C6: MIN/MAX limit detection              | 123         | 1372           | 120            | 0           | 0           | 19             | 2              |
| C3 with 2 slaves, C5: RANGE measurement      | 0           | 4439           | 451            | 12          | 71          | 125            | 16             |
| C4 with 2 slaves C6: MIN/MAX limit detection | 368         | 4157           | 365            | 12          | 71          | 125            | 16             |

All failure rates are given in FIT (failures / 10<sup>9</sup> hours)

## SIL Verification:

The Safety Integrity Level (SIL) of an entire Safety Instrumented Function (SIF) must be verified via a calculation of 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:** VEGA 1202-050-C R008 V1R3

**Safety Manual:** PROTRAC 30 Series 49354



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T-013, V3R7