SAFETY DEVICES

Certificate of compliance
In accordance with IEC 61508

N° 206602 / 2021A

The National Institute for Industrial Environment & Risks (INERIS – Institut National de l'Environnement Industriel et des Risques), a public organization, established by decree No.90-1089 of 7 December 1990, and accredited by COFRAC under number 5-0045 for certification of products and services (scope of accreditation available on the website www.cofrac.fr) issues a certificate of compliance related to IEC 61508 standards for the following product:

Denomination:	OLCT100
Type:	OLCT100 XP O_2 sensors
Manufacturer:	Teledyne Oldham Simtronics
Applicant of the certificate:	Teledyne Oldham Simtronics
	Arras, France

Description:

Fixed gas detector, that:

Detect toxic gas using electrochemical technology and generate a 4 - 20 mA current proportional to the gas concentration within specified concentration ranges and with specified response time T90;

Implement extensive autotest functionality in order to ensure a high failure identification rate and signal all failures affecting the safety function integrity by a fall-back value less or equal to 1mA or greater or equal to 23mA.

Certification procedures are available under www.ineris.fr.

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Only the entire document may be reprinted.

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1. Functional safety

a. Safety function

Activation of 4-20mA output accordingly with gas detection.

b. Classification of safety functions

Product	Reference	Type of gas	Measurement Range	Detection Cell	Level of compliance	SFF	λ_{DU}	PFD_{avg}
OLCT100	OLCT100 XP	O_2	0-30% vol	C2A, C5A	SIL 2	90%	$3,4 \times 10^{-7}$	$7,6 \times 10^{-4}$
	OLCT100 IS	O_2	0-30% vol	C/2	SIL 2	90%	$3,4 \times 10^{-7}$	$7,6 \times 10^{-4}$

Calculations have been performed with the following assumptions:
- Ti (Periodic Test Interval) = 6 months
- MTTR (Mean time to restauration) = 24h

c. Assessed versions and configurations

Hardware :

    D 6151541 - Carte OLCT100 EXPLO rev D

Software :

    OLCT100 explo tox V0.11

d. Reliability computations

SFF (safe failure fraction)	90,4%
λ_{SD} **(FIT)**	2664
λ_{SU} **(FIT)**	414
λ_{DD} **(FIT)**	160
λ_{DU} **(FIT)**	343
λ **(FIT)**	3583
PFD_{avg}	$1,82 \times 10^{-4}$
Architecture	1oo1
Ti (months)	6
MTTR (h)	24

Table 1: Functional safety analysis results for OLCT100 XP and IS for O_2 measurement

OLCT100 XP and OLCT100 IS are type B safety devices with HFT=0 according to IEC 61508.

3. Assessment

The safety function has been assessed in conformity with the standard IEC 61508 ed. 2. The assessment results are detailed in the report referenced: Ineris DRA-12-93664-02210A.

The INERIS certifies that, for the configurations, proof test intervals and mode of operation listed in the present certificate, and for the related indicated SIL capabilities:

- the IEC 61508 standard hardware requirements are met;
- the IEC 61508 standard probability of failure requirement are reached;
- the IEC 61508 software safety lifecycle requirements are met;
- the validation by tests has been properly done by Teledyne Oldham Simtronics;
- required Safety integrity level capability (SIL) and the Systematic capability (SC) are achieved for the safety function listed in this certificate.

4. Safety for use

To ensure that the certified SIL remain valid, the gas detectors must be used and maintain in accordance with the configuration and usage listed in this certificate and in accordance with the supplier documents NPO100GB rev M.

Any modification to the above item implies to issue an amendment to this certificate.

Verneuil-en-Halatte, le 08/09/2021

The Chief Executive Officer of INERIS,
By delegation
Dominique CHARPENTIER
Certification Manager