



Certificate of Conformity to IEC 61508 Safety Integrity Level (SIL) 2

Functional Safety of Safety-Related Programmable Electronic Systems

The **Michell Instruments UK Ltd, XTP601 Process Oxygen Analyser & XTC601 Binary Gas Analyser** have been assessed and are considered capable for use in a low demand Safety Function up to SIL 2 capability with regards to systematic, random failure rates and architectural constraints.

The assessment was based on the assumptions, data provided, and recommendations given in:

- **ESC Ltd Report: H215_FM001 rev. 2.**

The products were assessed against the following failure modes:

- XTP601: Ability to detect oxygen presence within another gas stream and generate a 4-20mA output;
- XTC601: Ability to detect target gas in another gas stream and generate a 4-20mA output.

The assessment was carried out to determine compliance with IEC 61508 (2010 Edition) with regards to:

- Random Hardware Failures (20% of SIL 2 range) (refer to Table below);
- Architectural Constraint (Type B, SFF >90%, <99%), HFT = 0;
- Systematic SIL 2 capability against IEC 61508 (2010 Edition) Parts 1, 2 and 3.

Device	λ NSR (/hr)	λ s (/hr)	λ DU (/hr)	λ DD (/hr)	SFF	Achieved PFD
XTP601	1.3E-07	1.6E-07	5.4E-08	7.4E-07	94%	3.6E-04
XTC601	1.3E-07	1.6E-07	3.9E-08	7.0E-07	96%	2.9E-04

IMPORTANT: It should be noted that this assessment does not include confirmation of the response time of the device. For response times (along with any relevant assumptions) reference should be made to the Safety Manual of each device and the total SIF response time **MUST** be compared against the process safety time for the specific application.

Managing Director: Kenneth G L Simpson
Member of the IEC 61508 committee
Assessment Date: February 2020, February 2022
Certificate: H215_CT001 rev. 1

ENGINEERING SAFETY CONSULTANTS LTD
is ISO9001-certified by Global Group, itself a
UKAS-accredited ISO9001 certification
body

Reg: 12Q12086

ENGINEERING SAFETY CONSULTANTS LTD
Tuition House
27-37 St George's Road Wimbledon London SW19 4EU UK
Telephone/Fax: +44 (0)20 8542 2807
E-Mail: info@esc.uk.net Web: www.esc.uk.net
Registered in England and Wales: 7006868
Registered Office: 27-37 St George's Road Wimbledon London SW19 4EU