Certificate / Certificat
Zertifikat / 合格証

YEC 1512066 C001

exida hereby confirms that the:

YTA710 & YTA610
Temperature Transmitter

Yokogawa Electric Corporation
Musashino-shi, Tokyo – Japan

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 B Element

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

PFD_{AVG} and Architecture Constraints must be verified for each application

Safety Function:

The YTA710 & YTA610 Temperature Transmitter is a 4-20 mA output smart device. It contains self-diagnostics and is programmed to send its output to a specified failure state upon internal detection of a failure.

Application Restrictions:

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

Kiyoshi Takai
Evaluating Assessor

John C Yozallinas
Certifying Assessor

The manufacturer may use the mark:

Revision 5.1June 19, 2019
Surveillance Audit Due
June 30, 2020

ISO/IEC 17065
PRODUCT CERTIFICATION BODY
#1004

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YTA710 & YTA610

Temperature Transmitter

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.

IEC 61508 Failure Rates in FIT*

Device	λ_{SD}	λ_{SU}	λ_{DD}	λ_{DU}	SFF
YTA710 & YTA610 Temperature Transmitter, single TC configuration	0	39	801	53	94.0%
YTA710 & YTA610 Temperature Transmitter, single RTD configuration	0	34	757	48	94.3%

* FIT = 1 failure / 10^9 hours

SIL Verification:

The Safety Integrity Level (SIL) of an entire Safety Instrumented Function (SIF) must be verified via a calculation of 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 subsystem must be checked to assure compliance with minimum hardware fault tolerance (HFT) requirements.

The following documents are a mandatory part of certification:

Assessment Report: YEC 15-12-066 R001 V5R1 or above

Safety Manual: IM 01C50T01-02EN Appendix A.: 4th edition or later

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Sellersville, PA 18960