Certificate / Certificat
Zertifikat / 合格証

ABB 1704094 C001

exida hereby confirms that the:

LLT100 Lidar Sensor

ABB
Quebec, QC - Canada

has been assessed per the relevant requirements of:

IEC 61508 : 2010 Parts 1-3

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_H

PFH/PFD_{avg} and Architecture Constraints must be verified for each application

Safety Function:

The 4 to 20 mA current output will reflect the calibrated range in level, volume or ullage, as selected by the user, within the specified safety accuracy and safety time; and will change to 3.6 or 21 mA within the specified time upon detection of a failure.

Application Restrictions:

The unit must be properly designed into a Safety Instrumented Function per the Safety Manual requirements. This includes detecting both 3.6 and 21 mA to indicate an LLT100 fault.

Evaluating Assessor

Certifying Assessor

The manufacturer may use the mark:

Revision 4.1 October 31 2023
Surveillance Audit Due
December 31, 2024

ANSI National Accreditation Board
ACCREDITED
ISO/IEC 17065
PRODUCT CERTIFICATION BODY
#1004

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Systematic Capability: SC 2 (SIL 2 Capable)

Random Capability: Type B Element

SIL 2 @ HFT=0; Route 1_H

PFH/PFD_{avg} and Architecture Constraints must be verified for each application

Series LLT100

Lidar Sensors

Systematic Capability:

The product has 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 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*

FPGA version up to 1.1.3 | Software version up to 1.1.3

Device	λ_{SD}	λ_{SU}	λ_{DD}	λ_{DU}
ABB LLT100	0	1559	2852	124

Hardware version 2.0.0 | Software version 1.1.31

Device	λ_{SD}	λ_{SU}	λ_{DD}	λ_{DU}
ABB LLT100	0	356	1659	118

* 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 PFH/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 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: ABB 17-04-094 R001 V4R1

Safety Manual: AA019031-01 Rev C LLT100 SIL Functional Safety Guide

80 N Main St
Sellersville, PA 18960