



The manufacturer
may use the mark:



Revision 1.0 June 29, 2026
Surveillance Audit Due
January 27, 2027



NB 2981

EC Type-Examination Certificate

SON 2408030 C001

exida hereby confirms that the:

ADAR 3D Ultrasonic Sensor

Sonair AS

Oslo

Norway

Has been assessed per the relevant requirements of:

IEC 61508 : 2010 Parts 1-3

ISO 13849 : 2023 Part 1

ISO 13849 : 2012 Part 2

IEC 61496 : 2020 Part 1

and meets requirements providing a level of integrity to:

Systematic Capability: SC 2 (SIL 2 Capable)

Random Capability: Type B, Route 1_H Device

PL d, Category 2

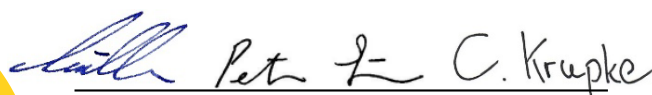
Type 3 ESPE

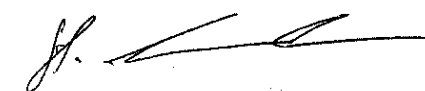
Safety Function:

Detect if persons, body parts or hazardous objects larger than the device's detection capability are present in a protective zone resulting in putting the EUC (or part thereof) into a safe state or maintain a safe state.

The product under test complies with the requirements for machines as defined in Annex IV of the EC Directive 2006/42/EC.




Evaluating Assessor



Certifying Assessor

ADAR 3D Ultrasonic Sensor

HW version: SPN1025A v1.3.5

SW version: 2.0.0



Gateway Hub, Suite 219 - 221
Shannon Airport House
Shannon Free Zone
Co. Clare, V14E370 Ireland

T-408, V1R1

Certificate / Certificat / Zertifikat / 合格証

SON 2408030 C001

Systematic Capability: SC 2 (SIL 2 Capable)
Random Capability: Type B, Route 1_H Device
PL d, Category 2
Type 3 ESPE

Systematic Capability:

The Product has met manufacturer design process requirements of Safety Integrity Level (SIL) 2 / PL d. 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/ PL level higher than stated.

Random Capability:

The SIL/PL limit imposed by the Architectural Constraints must be met for each element.

IEC 61508 Failure Rates in FIT* and Metrics according to ISO 13849-1

Failure category	Failure rates (in FIT)
Safe Undetected (λ_{SAFE})	394
Dangerous Detected (λ_{DD})	2801
Dangerous Undetected (λ_{DU})	150
Diagnostic Detected ($\lambda_{DIAG,D}$)	87
Diagnostic Undetected ($\lambda_{DIAG,U}$)	24
No effect (λ_{NE})	462
No part (λ_{NP})	244
Total failure rate	3345
SFF	95%
SIL AC	SIL 2
DC	95% (medium)
MTTF_D	38 years (high)
Average frequency of a dangerous failure per hour (PFH)	1.50E-07 1/h
Performance Level (PL)	PL d

* FIT = 1 failure / 10⁹ hours

SIL Verification:

The Safety Integrity Level (SIL) of an entire Safety Instrumented Function (SIF) must be verified via a calculation of PFH considering the architecture, 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:

sonair 2408-030-C R005 IEC61508 ISO13849 Assessment Report V1R0
sonair 2408-030-C R007 EC-Type Machinery Directive Certification Manager Report

Safety Manual: SDN115 ADAR Safety manual-v1.1