

Certificate



No.: 968/FSP 2098.00/20

Product tested	Sensors for level detection, level and interface measurement NIVOGUIDE	Certificate holder	UWT GmbH Westendstraße 5 87448 Betzigau Germany
Type designation	NIVOGUIDE 8100, NIVOGUIDE 3100, NIVOGUIDE 8200		
Codes and standards	IEC 61508 Parts 1-7:2010 IEC 61511-1:2016+ Corr.1:2016 + AMD1:2017 IEC 61326-3-2:2017	EN 12952-11:2007 (in extracts) EN 12953-9:2007 (in extracts)	
Intended application	Sensors for level detection and level measurement of liquids and bulk solids as well as for interface measurement of liquids. The TDR-sensors of the NIVOGUIDE series comply with the requirements of the stated standards and can be used in a safety-related system acc. IEC 61508 up to SIL 2 and redundant (HFT=1) up to SIL 3 (Systematic Capability SC 3). The type NIVOGUIDE 8200 is also suitable for the use as water level limiter according to EN 12952-11 and EN 12953-9 in steam vessel systems. For more details see annex to the certificate.		
Specific requirements	The instructions of the associated Installation, Operating and Safety Manual shall be considered.		

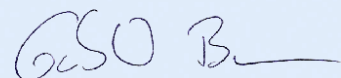
Valid until 2025-04-24

The issue of this certificate is based upon an examination, whose results are documented in Report No. 968/FSP 2098.00/20 dated 2020-07-29.
This certificate is valid only for products which are identical with the product tested.

TÜV Rheinland Industrie Service GmbH
Bereich Automation
Funktionale Sicherheit
Am Grauen Stein, 51105 Köln

Köln, 2020-07-29

Certification Body Safety & Security for Automation & Grid


Dipl.-Ing. Gebhard Bouwer

Annex to Certificate-No.: 968/FSP 2098.00/20 dated 2020-07-29

Summary of the characteristic data for use of the product in safety-related applications

Product: NIVOGUIDE

Company: UWT GmbH, Westendstraße 5, 87488 Betzigau, Germany

Types:

Type designator	Hardware Version	Software Version
8100, 3100, 8200	1.0.0, 1.0.1 and 1.0.2	1.0.0, 1.0.1, 1.1.0 and 1.2.0

1. Characteristic data acc. to IEC 61508 part 1-7:2010

1.1 Data for use of the product as a subsystem in safety functions

	Value	Remark
Safety Integrity Level	SIL 2	For HFT = 0 applications up to SIL 2
	SC 3	For HFT =1 applications up to SIL 3
PFH [1/h]	1.58 E-07	Corresponds to 15.8 % of SIL 2
PFD _{avg}	3.82 E-03	Corresponds to 38.2 % of SIL 2; this value is valid for the stated Proof Test Interval T ₁
Proof Test Interval T ₁	5 a	
SFF	> 90 %	
Instrument type	Type B	IEC 61508-2, section 7.4.4.1.3
HFT	0	

1.2 Additional data for use of the product as a subsystem element in safety functions

	Value	Remark
Dangerous failure rate λ_{dd}	2154 FIT	
Dangerous undetected failure rate λ_{du}	158 FIT	
Fail high rate λ_{AD}	32 FIT	Rate for diagnostic failure lead to the failure current ≤ 3.6 mA and becomes λ_{dd} if detected (e.g. by logic solver)
Fail high rate λ_H	9 FIT	> 21 mA ("fail high"), becomes λ_{dd} if detected (e.g. by logic solver)
Fail low rate λ_L	60 FIT	≤ 3.6 mA ("fail low"), becomes λ_{dd} if detected (e.g. by logic solver)
Diagnostic Test Interval T _D	< 30 min	
PTC Test 1	93 %	For performance of PTC see safety manual 63524
PTC Test 2	98 %	For performance of PTC see safety manual 63524