

Manufacturer's Declaration



Company **Endress+Hauser Conducta GmbH+Co. KG**
Dieselstrasse 24, 70839 Gerlingen, Germany

declares as manufacturer of analytical products that the

Product KSG2-SIL electronics for pH glass sensor head

Regulations has been evaluated under requirements of functional safety according to IEC 61508 Edition 2.
IEC 61508-1:2010
IEC 61508-2:2010
IEC 61508-3:2010
IEC 61508-4:2010
IEC 61010-1:2010
EN 60529:2010

The initial certification process has been done by TÜV SÜD according to IEC 61508 Edition 1 and is documented in test report EG83499T and certified on April 29th, 2011.

Parameters

Safety function	Measuring, amplifying, digitizing and communicating of pH voltage value and temperature value using Memosens protocol V1.x to a higher system (e. g. a transmitter).
Systematic SIL	2
Software SIL	3
HFT	0
Device type	B
Mode of operation	Low demand mode
Safe failure fraction SFF	91.3 %
MTTR	8 h
Proof test interval T1	1 year, strongly dependent on application!
$\lambda_{SD} / \lambda_{SU}$	0 FIT / 647 FIT
$\lambda_{DD} / \lambda_{DU}$	1670 FIT / 191 FIT
$PFD_{avg} \quad T1 = 1 \text{ years}$	8.39×10^{-4}
MTBF	46 years (reciprocal of λ_{total} , assuming constant failure rate)
$MTBF_{DU}$	597 years (reciprocal of λ_{DU} , assuming constant failure rate)

The device was assessed independently in a complete Functional Safety Assessment. All values shown above have been calculated at an electronics temperature of 100 °C. In the event of device modifications, a modification process compliant with IEC 61508 is applied.

Gerlingen, 03.12.2018



i. V. Uwe Rößiger
Manager Certifications and Approvals



i. A. Florian Fetz
Manager Functional Safety