BUREAU VERITAS
Certification

Type certificate by assessment of the product design

Issued to

Dandong Top Electronics Instrument Group Co., Ltd
No.10, Huanghai Street, Zhenxing District,
Dandong City, Liaoning Province,
China

Bureau Veritas Certification certifies that the design of the following product by the company mentioned above:

DLT9010
Displacer Level Transmitter

has been assessed and fulfils the relevant requirements of the following standard:

IEC 61508 (edition 2) – Parts 1, 2, 3, 4

in accordance with SIL 2

as a type B element
and following the description, configuration and limitation defined in the annex of the present certificate

This certificate only applies to the design of the product (as referred above) and to the corresponding technical file.

The annex is an integral part of this certificate.

This certificate is based on the following assessment report:

- Assessment report reference:
  INS-NE-17-096_Assessment Report_EN_R0

cofrac
CERTIFICATION DE PRODUITS ET SERVICES
ACCREDITATION N°5-0051
Liste des sites et portées disponibles sur www.cofrac.fr

Certificate N°: C170815
Emission date: 22/03/2019
End of validity: 21/03/2024

Jacques MATILLON
General Manager
p/p Eric Rouaix
Functional Safety Certification Manager

RECYCLÉ Papier FSC FSC® C021765

Annex to the certificate n°C170815 issued by Bureau Veritas Certification to Dandong Top Electronics Instrument Group Co., Ltd

Product description

The product versions used for the assessment are the following:

Product	Model	Version number
Displacer Level Transmitter	DLT9010	HW: V1.0 SW: V1.2.1

The product Safety Function found compliant to SIL 2 is the following:

- SF1: To collect the liquid (boundary) level in the industrial field. If the signal is in the set range and the linear output of the standard 4 ~ 20 mA current signal, the accuracy is in line with 1.0%FS (full measurement range). If the liquid level signal is outside the range, the linear output current signal can be extended to 3.8 ~ 20.5 mA. Beyond this range, two boundary values of 3.8 and 20.5mA are taken.

Hypothesis and calculation results

Hypothesis taken into account are the following:

- the mode of operation can be "Low demand" or "Continuous Demand";
- the proof test interval is 1 year;
- the MTTR (Mean Time To Repair) used for each component is 8 hours;
- failure rates are considered constant and do not take into account early life and end-of-life failures.

		Final results		
Type	Safety function	SIL	Probability of Failure on Demand (PFD)	Average Frequency of Dangerous Failure (PFH)
DLT9010	SF1	SIL 2	2.54E-04	5.68E-08 h^{-1}

Conditions and limits

Use of the product must comply with the terms of use in order to preserve SIL2 properties. These rules are reminded in the section 5.1 of the evaluation report (ref: INS-NE-17-096_Assessment Report_EN_R0).

Acceptable environmental constraints and design lifetime for the product are stated in the following document:

- Safety Operation Manual V0.1(Ref.: [ZTD-SOM])

These elements must be checked for each integration of the product, as well as during the operation and maintenance phases.

This certificate does not imply compliance with European Directive and does not allow for provision of a CE marking.