

Declaration of Conformity

Functional Safety according to IEC 61508

Based on NE 130 Form B.1

Endress+Hauser SE+Co. KG, Hauptstraße 1, 79689 Maulburg

being the manufacturer, declares that the product

Liquiphant M FTL51H

Order code	FTL51H-A.GW2.BC.4.G6.Y
Modification	060 - Y = 71414835 = *Separate housing with 5 m cable, plug LEMO (on housing side)
Safety function	MAX-Detection
Serial No.:	NC007E01029, NC007F01029, NC008001029, NC008101029

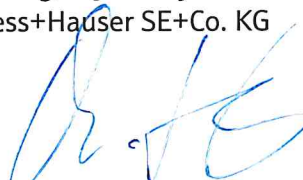
*Unprotected cables and connectors can cause an undetected device failure. This means that an overflow or dry protection run is not detected. Protect cables and connectors against external influences and damage by means of suitable measures.

is suitable for the use in safety-instrumented systems according to IEC 61508. The instructions of the corresponding functional safety manual must be followed.

This declaration of compliance is exclusively valid for the customer listed in the cover letter of the respective Endress+Hauser sales center and for the listed products and accessories in delivery status.

Maulburg, 3-January-2019
Endress+Hauser SE+Co. KG

i. V.


Manfred Hammer
Dept. Man. R&D Quality Management/FSM
Research & Development

General			
Device designation and permissible types	FTL51H-AGW2BC4G6Y		
	Serial no.: NC007E01029, NC007F01029, NC008001029, NC008101029		
Safety-related output signal	relay output		
Fault signal	contact open		
Process variable/function	level point measurement for liquids		
Safety function(s)	Overfill Protection (MAX)		
Device type acc. to IEC 61508-2	☐ Type A ☒ Type B		
Operating mode	☒ Low Demand Mode ☐ High Demand Mode ☐ Continuous Mode		
Valid hardware version	01.ww.ww (ww: any double number)		
Valid software version	01.zz.zz (zz: any double number)		
Safety manual	SD 162F		
Type of evaluation (check only <u>one</u> box)	☐ Complete HW/SW evaluation parallel to development incl. FMEDA and change request acc. to IEC 61508-2, 3 ☒ Evaluation of "proven in use" performance for HW/SW incl. FMEDA and change request acc. to IEC 61508-2, 3 ☐ Evaluation of HW/SW field data to verify „prior use“ acc. to IEC 61511 ☐ Evaluation by FMEDA acc. to IEC 61508-2 for devices w/o software		
Evaluation through – report/certificate no.	exida Report No.: E+H 02/6-16 R007		
Test documents	Development documents	Test reports	Data sheets
SIL - Integrity			
Systematic safety integrity		☒ SIL 2 capable	☐ SIL 3 capable
Hardware safety integrity	Single channel use (HFT = 0)	☒ SIL 2 capable	☐ SIL 3 capable
	Multi channel use (HFT ≥ 1)	☒ SIL 2 capable	☐ SIL 3 capable
FMEDA			
Safety function	MAX		
$\lambda_{DU}^{1),2)}$	110 FIT		
$\lambda_{DD}^{1),2)}$	0 FIT		
$\lambda_{SU}^{1),2)}$	324 FIT		
$\lambda_{SD}^{1),2)}$	52 FIT		
SFF	>77 %		
PFD _{avg} (T ₁ = 1 year) ²⁾ (single channel architecture)	4,82 × 10 ⁻⁴		
PFD _{avg} (T ₁ = 5 years) ²⁾ (single channel architecture)	2,41 × 10 ⁻³		
PFH	–		
PTC ³⁾	– %		
$\lambda_{total}^{1),2)}$	486 FIT		
Diagnostic test interval ⁴⁾	1 min		
Fault reaction time ⁵⁾	1 min		
Comments			
Observe SV01222F			
Declaration			
☒	Our internal company quality management system ensures information on safety-related systematic faults which become evident in the future		

¹⁾ FIT = Failure In Time, number of failures per 10⁹ h

²⁾ Valid for average ambient temperature up to +40 °C (+104 °F)

For continuous operation at ambient temperature close to +60 °C (+140 °F), a factor of 2.1 should be applied

³⁾ PTC = Proof Test Coverage

⁴⁾ All diagnostic functions are performed at least once within the diagnostic test interval

⁵⁾ Maximum time between error recognition and error response