

TYPE APPROVAL CERTIFICATE

This is to certify:**That the Level Switches**

with type designation(s)

Liquiphant FailSafe FTL80, FTL81, FTL85

Issued to

Endress + Hauser SE + Co. KG
Maulburg, Germany

is found to comply with

DNV GL rules for classification – Ships, offshore units, and high speed and light craft**Application :****Product(s) approved by this certificate is/are accepted for installation on all vessels classed by DNV GL.****Location classes:****Temperature D****Humidity B****Vibration A****EMC B****Enclosure B, C (F27 stainless steel housing only)**Issued at **Hamburg** on **2019-08-08**This Certificate is valid until **2024-08-07**.for **DNV GL**DNV GL local station: **Augsburg**Approval Engineer: **Dariusz Lesniewski**

Joannis Papanuskas
Head of Section

This Certificate is subject to terms and conditions overleaf. Any significant change in design or construction may render this Certificate invalid. The validity date relates to the Type Approval Certificate and not to the approval of equipment/systems installed.



Product description

Sensor for minimum or maximum level detection for liquids in tanks or pipes

Use only together with a separate switching unit:

- Nivotester FailSafe FTL825 (type approved, DNVGL Certificate no. TAA00002F5)
- PLC, Safety PLC (type approved)

Sensor types:

- FTL80 - compact
- FTL81, 85 - short pipe version max. length 118 mm
- FTL81, 85 - pipe extension fixed at each 1000 mm between and max. free length at the end 150 mm

Housing (material): stainless steel, aluminium

Process connection: thread G, R or NPT, Flanges

Electrical connection: two-wire connection

Power supply: 24V DC (nominal), 12V to 30V DC (range)

Output signal: 6mA / 13.5mA $\pm$ 0.25mA, 0.25Hz (MIN mode)
9mA / 18.5mA $\pm$ 0.25mA, 0.25Hz (MAX mode)

Electronic insert: LEDs (green, red, yellow), 2x rotary setting switches, terminals

HW-Version: V01.00 / SW-Version: V01.00.xx

Order code for Liquiphant Failsafe FTL80 10 20 30 40 50 60 70 80 90 100 600 610 620	
10 = Approval	Any double letter and/or number combination
20 = Electronics; Output	S
30 = Display; Operating	A
40 = Housing:	C, D, E, I
50 = Electrical Connection	Any single letter and/or number
60 = Application	A, C*, D* (*not in combination with enclosure F27)
70 = Sensor Material	1, 2, 5
80 = Surface Refinement	Any single letter and/or number
90 = Sensor Type	AC, AJ, YY* (*except for safety-relevant characteristics)
100 = Process Connection	Any triple letter and/or number combination, except for thread $\leq 1/2"$, except for synthetic material
600 = Sensor Design	MP
610 = Accessory Mounted	Any double letter and/or number combination, except for safety-relevant characteristics
620 = Accessory Enclosed	No option allowed
Product structure based on / related to the drawing no. 960016113-- (Release date: 26.06.2013)	

Order code for Liquiphant Failsafe FTL81 10 20 30 40 50 60 70 80 90 100 600 610 620	
10 = Approval	Any double letter and/or number combination
20 = Electronics; Output	S
30 = Display; Operating	A
40 = Housing:	C, D, E, H, I
50 = Electrical Connection	Any single letter and/or number
60 = Application	A, B, C*, D* (*not in combination with enclosure F27)
70 = Sensor Material	1, 2, 5
80 = Surface Refinement	Any single letter and/or number
90 = Sensor Type	BC, BJ, CC, CJ, DC, DJ, YY* (*except for safety-relevant characteristics)
100 = Process Connection	Any triple letter and/or number combination, except for thread $\leq 1/2"$, except for synthetic material
600 = Sensor Design	MP
610 = Accessory Mounted	Any double letter and/or number combination, except for safety-relevant characteristics
620 = Accessory Enclosed	No option allowed
Product structure based on / related to the drawing no. 960016112-- (Release date: 26.06.2013)	

Job Id: **262.1-030665-1**
Certificate No: **TAA00002F4**

Order code for Liquiphant Failsafe FTL85 10 20 30 40 50 60 70 80 90 100 600 610 620	
10 = Approval	Any double letter and/or number combination
20 = Electronics; Output	S
30 = Display; Operating	A
40 = Housing:	C, D, E, H, I
50 = Electrical Connection	Any single letter and/or number
60 = Application	N, P, T
70 = Sensor Material	1, 5
80 = Surface Refinement	Any single letter and/or number
90 = Sensor Type	BN, BP, BQ, BR, BT, CN, CP, CQ, CR, CT, DN, DP, DQ, DR, DT, ET, FE, GT, HT, IT, YY* (*except for safety-relevant characteristics)
100 = Process Connection	Any triple letter and/or number combination, except for thread $\leq 1/2"$, except for synthetic material
600 = Sensor Design	MP
610 = Accessory Mounted	Any double letter and/or number combination, except for safety-relevant characteristics
620 = Accessory Enclosed	No option allowed
Product structure based on / related to the drawing no. 960016114-- (Release date: 26.06.2013)	

Approval conditions

The Type Approval covers hardware listed under Product description. When the hardware is used in applications to be classed by DNV GL, documentation for the actual application is to be submitted for approval by the manufacturer of the application system in each case. Reference is made to DNV GL rules for classification of ships Pt.4 Ch.9 Control and monitoring systems.

Ex-certification is not covered by this certificate. Application in hazardous area to be approved in each case according to DNV GL Rules and Ex-Certification / Special Condition for Safe Use listed in valid Ex-certificate issued by a notified/recognized Certification Body.

Type Approval documentation

Tests carried out

Applicable tests according to class guideline DNVGL-CG-0339, November 2016.

Marking of product

The products to be marked with:

- manufacturer name
- model name
- serial number
- power supply ratings

Periodical assessment

The scope of the periodical assessment is to verify that the conditions stipulated for the type are complied with, and that no alterations are made to the product design or choice of systems, software versions, components and/or materials.

The main elements of the assessment are:

- Ensure that type approved documentation is available
- Inspection of factory samples, selected at random from the production line (where practicable)
- Review of production and inspection routines, including test records from product sample tests and control routines
- Ensuring that systems, software versions, components and/or materials used comply with type approved documents and/or referenced system, software, component and material specifications
- Review of possible changes in design of systems, software versions, components, materials and/or performance, and make sure that such changes do not affect the type approval given



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- Ensuring traceability between manufacturer's product type marking and the type approval certificate
- Periodical assessment is to be performed after 2 years and after 3.5 years. A renewal assessment will be performed at renewal of the certificate.

END OF CERTIFICATE