

# TYPE APPROVAL CERTIFICATE

## This is to certify:

### That the Level Switches

with type designation(s)  
**Liquiphant FTL31**

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.**

|                    |                                  |
|--------------------|----------------------------------|
| <b>Temperature</b> | <b>D</b>                         |
| <b>Humidity</b>    | <b>B</b>                         |
| <b>Vibration</b>   | <b>B</b>                         |
| <b>EMC</b>         | <b>B</b>                         |
| <b>Enclosure</b>   | <b>C, D (cable version only)</b> |

Issued at **Hamburg** on **2020-10-06**

This Certificate is valid until **2025-10-05**.

DNV GL local station: **Augsburg**

for **DNV GL**

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.

LEGAL DISCLAIMER: Unless otherwise stated in the applicable contract with the holder of this document, or following from mandatory law, the liability of DNV GL AS, its parent companies and subsidiaries as well as their officers, directors and employees ("DNV GL") arising from or in connection with the services rendered for the purpose of the issuance of this document or reliance thereon, whether in contract or in tort (including negligence), shall be limited to direct losses and under any circumstance be limited to 300,000 USD.



## Product description

Switching behaviour: on/off

Function:

- 3-wire DC-PNP: Positive signal at the switch output of the electronics
- 2-wire AC/DC: Load switching in the power supply line

Supply voltage:

- DC-PNP: 10 to 30 V DC, 2-wire
- AC/DC: 20 to 252 V AC/DC, 2-wire

Electrical connection: valve plug, M12 connector or cable (5m)

Housing versions: compact or short tube

LED display: green, yellow, red

Test magnet for function test

Degree of protection: IP 65 - valve plug  
IP 65/67 - M12 connector  
IP 66/68 (24h) - cable

Order code:

| Selection code           | Description                                     |
|--------------------------|-------------------------------------------------|
| 10 Approval              |                                                 |
| AA                       | Non Ex-area                                     |
| CA                       | CSA C/US General Purpose                        |
| 20 Power supply          |                                                 |
| 1                        | 20-253VAC/DC; 2-Wire                            |
| 2                        | 10-30VDC; 3-Wire PNP                            |
| 40 Electrical Connection |                                                 |
| M                        | Connector M12, IP65/67 NEMA Type 4X Encl.       |
| S                        | Cable 5m, IP66/68 NEMA Type 4X/6P Encl.         |
| U                        | Valve plug ISO4400 M16, IP65 NEMA Type 4X       |
| V                        | Valve plug ISO4400 NPT1/2, IP65                 |
| W                        | Valve plug QUICKON, IP65                        |
| 50 Sensor Design         |                                                 |
| 2                        | Max. Process temperature 100°C                  |
| 3                        | Max. Process temperature 150°C                  |
| 60 Sensor Type           |                                                 |
| AA                       | Compact version 316L Ra <3,2µm                  |
| BA                       | Short rode version 316L Ra <3,2µm               |
| 110 Process connection   |                                                 |
| VAJ                      | Thread ASME MNPT1/2, 316L                       |
| VBJ                      | Thread ASME MNPT3/4, 316L                       |
| VCJ                      | Thread ASME MNPT1, 316L                         |
| WBJ                      | Thread ISO228 G1/2, 316L                        |
| WCJ                      | Thread ISO228 G3/4, 316L                        |
| WDJ                      | Thread ISO228 G1, 316L                          |
| WSJ                      | Thread ISO228 G1, 316L, with mounting adapter   |
| W5J                      | Thread ISO228 G3/4, 316L, with mounting adapter |
| XBJ                      | Thread EN10226 R1/2, 316L                       |
| XCJ                      | Thread EN10226 R3/4, 316L                       |
| XDJ                      | Thread EN10226 R1, 316L                         |
| 590 Further approvals    |                                                 |
| LC                       | WHG Overfill prevention (certificate)           |
| LE                       | DNV GL Marine approval                          |

## 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

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Certificate No: **TAA00002W0**

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.

#### Product certificate

If specified in the Rules, ref. Pt.4 Ch.9 Sec.1, the control and monitoring system in which the above listed hardware is used shall be delivered with a product certificate. For each such delivery the certification test is to be performed at the manufacturer of the application system before the system is shipped to the yard. The test shall be done according to an approved test program. After certification the clause for software control will be put into force.

### **Type Approval documentation**

#### **Tests carried out**

Applicable tests according to class guideline DNVGL-CG-0339, December 2019.

#### **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
- 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