



## VFS-FP (ATEX/IECEX Vertical Float Switch)

The Deeter VFS-FP is a vertical magnetic float switch for control and indication of a liquid level while in a potentially explosive atmosphere. The VFS-FP is also available with Marine Type Approval.



 1/2G 2D  
Ex db IIC (\*) Ga/Gb  $-55^{\circ}\text{C} \leq \text{Ta} \leq +85^{\circ}\text{C}$   
Ex tb IIIC (\*) Db  $-40^{\circ}\text{C} \leq \text{Ta} \leq +85^{\circ}\text{C}$   
IP68

 II 2GD  
Ex db IIC (\*) Gb  $-55^{\circ}\text{C} \leq \text{Ta} \leq +85^{\circ}\text{C}$   
Ex tb IIIC (\*) Db  $-40^{\circ}\text{C} \leq \text{Ta} \leq +85^{\circ}\text{C}$   
IP68

\* Temperature class options to suit environment and process temperatures

T5 / T100°C for process temperatures  $\leq 85^{\circ}\text{C}$

T4 / T135°C for process temperatures  $\leq 125^{\circ}\text{C}$

T3 / T200°C for process temperatures  $\leq 190^{\circ}\text{C}$

ATEX Certificate: ExVeritas 17ATEX0301X

IECEX Certificate: IECEX EXV 17.0030X

Refer to certificate for clarification of directive code and equipment protection level.

### Features include

- ATEX and IECEX approved.
- Marine Type Approval available.
- Stainless Steel 316L housing and wetted components.
- Suitable for gas and dust environments.
- IP68 Ingress protection.
- Voltage free reed switch contacts
- Narrow sensor stem and external mounting.
- Suitable for high liquid temperatures.
- Custom options available

## VFS-FP (ATEX/IECEx Vertical Float Switch)

Type	Specification	
Sensor technology	Magnetic float with reed switch	
Sensor tube and wetted materials	Stainless steel 316L	
Connection head material	Stainless steel 316L	
IP rating with suitable cable gland	IP68	
Approximate weight:	1.383 kg	
Float Diameter: Specific gravity:	52.6mm : 0.6	
Maximum liquid temperature:	-20 to +85°C	125°C/190° C max, - 55°C min on request
Maximum head temperature	-20 to +80°C	Note 1
Maximum operating pressure	150PSI / 10Bar standard	Note 2
Thread connection-Sensor tube	½" NPT	
Thread connection-Tank Mounting	2" BSP	
Thread connection-Wiring port	M20X1.5	
Connection head height	95mm	
Power supply:	Voltage free contacts	
Switch rating:	0 to 240vac. 1Amp. 50Watts max	Note 3

Note 1: When this equipment is intended to be used in a liquid with a process temperature above 85°C it is an essential requirement that the sensor head temperature is measured to determine if the ambient air cooling is sufficient to keep the head below 80°C. See installation manual for detail.

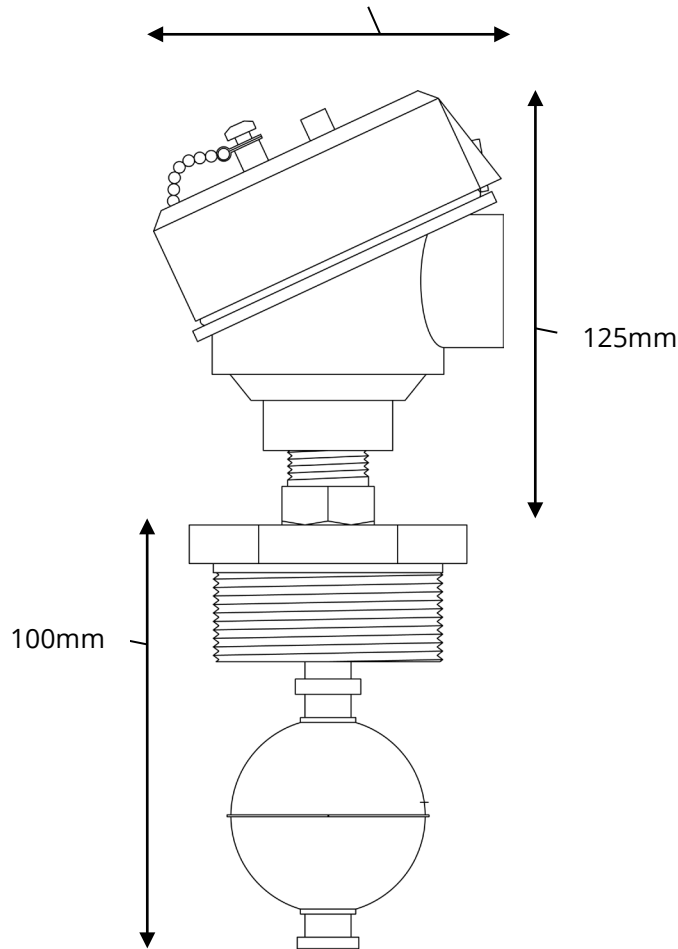
Note 2: The F/S FP sensor float and tube can withstand the stated pressure when sealed inside a tank. The connection head and resin seal to the sensor stem must not be pressurised. The standard zone0 fittings are rated at 10bar, these fittings are not part of the certified flameproof seal and should not be considered as part of an explosion proof containment. Please call our technical sales department regarding sensors for liquid pressures up to 31bar.

Note 3: The sum current drawn by all switch points must not exceed 1Amp total.

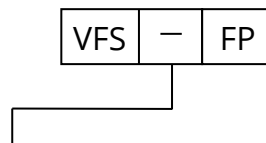
Note 4: Sensors suitable for higher temperatures are available.

90mm

## VFS-FP (ATEX/IECEx Vertical Float Switch)



### Ordering Code



VFS-FP = VFS-FP ATEX/IECEx Vertical Liquid Level Sensor

Custom options available please call our sales office to discuss your requirements. Options include: Probe length, Switch voltage, Switch point quantity, Switch point height, Threaded mounting/seal options, Reed/Hall Effect technology, float sizes, 8 or 12mm sensor tube, cable entry thread.

**All electrical equipment should be installed by a qualified/certified electrician.**

The Deeter Group follows a policy of continual development of its products and reserves the right to change specifications and/or features without notice.

## 1 EU - Type Examination Certificate

2 Equipment intended for use in Potentially Explosive Atmospheres Directive 2014/34/EU

3 Certificate Number: ExVeritas 17ATEX0301X Issue: 2

4 Equipment: Liquid Vertical Continuous Sensor, Flameproof (LVCS FP) Float Switch,  
Flameproof (F/S FP) Liquid Vertical Continuous Sensor with integrated  
display, Flameproof (LVCSi FP)

5 Manufacturer: Deeter Electronics Ltd

6 Address: Deeter House, Valley Road, Hughenden Valley, High Wycombe, Bucks,  
HP14 4LW, UK

7 This equipment and any acceptable variation thereto are specified in the schedule to this certificate and the documents therein referred to.

8 ExVeritas, Notified Body number 2804 in accordance with Article 17 of the Council Directive 2014/34/EU of 26 February 2014, certifies that this equipment or protective system has been found to comply with the Essential Health and Safety Requirements relating to design and construction of equipment and protective systems for use in potentially explosive atmospheres given in Annex II to the Directive

9 Compliance with the applicable Essential Health and Safety Requirements has been assured by compliance with the following Standards and section 16 of this certificate:


BS EN IEC 60079-0: 2018      BS EN 60079-1:2014      BS EN 60079-26:2015  
BS EN 60079-31:2014

10 If the sign "X" is placed after the certificate number, it indicates that the equipment is subject to special conditions for safe use specified in the schedule to this certificate.

11 This EU-Type Examination Certificate relates only to the design, construction, examination and tests of the specified equipment or protective system in accordance to the Directive 2014/34/EU. Further requirements of the Directive apply to the manufacturing process and supply of this equipment or protective system. These are not covered by this certificate.

12 The marking of the equipment shall include the following:

 II 1/2G (or 2G) Ex db IIC T\* Ga/Gb (or Gb) -55°C ≤ T<sub>amb</sub> ≤ +85°C

 II 2 D Ex tb IIIC T\* Db -40°C ≤ T<sub>amb</sub> ≤ +85°C

On behalf of ExVeritas



Peter Lauritzen  
Managing Director

## Schedule

### 13 Description of Equipment or Protective System

The LVCS FP (Liquid Vertical Continuous Sensor) and F/S FP (Float Switch) are liquid level sensors with either a continuous analogue or switching output. The equipment comprises of a flameproof, component certified instrument housing with stainless steel level guide which is threaded into the housing. The level guide consists of either an 8mm or 12mm stainless steel tube which contains the sensing electronics. The instrument housing is used for termination and mounting of optional PCB's, depending on the communication and I/O's required. The level guides can be various lengths and are mounted with up to seven stainless steel floats, each containing a magnetic ring. The equipment can be supplied with an optional threaded adaptor or equivalent gas tight seal for mounting across a boundary of two hazardous area zones.

When connected to process temperatures above 85°C, the instrument housing must be sufficiently cooled to keep it below 80°C, as detailed in the manufacturer's instructions.

The following temperature classes are applicable based on the process temperature which the equipment is connected to:

Model	Level guide length (mm)	Sensing device	Input/Output Options	Process Temperature and associated temperature class	Cable Entry sizes
LVCS	100 to 6000	Reed switch or Hall effect	Optional PCB's for various input/outputs	≤85°C (T5) (T100°C) ≤125°C (T4) (T135°C) ≤180°C (T3) (T200°C)	M20 x 1.5 or ½" NPT
F/S	60 to 6000	Reed switch	Between 1 to 7 I/O float switches, direct output	≤85°C (T5) (T100°C) ≤125°C (T4) (T135°C) ≤190°C (T3) (T200°C)	M20 x 1.5 or ½" NPT

The following ratings are applicable:

- 0 to 2v output. 5 to 25vdc input @ 25mA
- 0 to 4 v output. 7 to 25Vdc input @ 25mA
- 0 to 10v output. 14 to 28vdc input @ 35mA
- 8 to 28vdc input @30mA Multi interface 4-20mA, voltage output
- 0-50VDC 0-240V AC 1Amp (F/S FP reed switch only)

#### 13.1 Details of changes

The following changes are incorporated in Issue 1 of the certificate:

- Update to the latest edition of EN 60079-0 as detailed on page 1 of the certificate.
- Inclusion of the LVCSi range of vertical liquid level sensors with integrated display and optional temperature sensor.

Model	Level guide length (mm)	Sensing device	Input/Output Options	Process Temperature and associated temperature class	Cable Entry sizes
LVCSi	100 to 6000	Reed switch or Hall effect. Optional temperature sensor	Optional PCB's for various input/outputs	≤85°C (T5) (T100°C) ≤125°C (T4) (T135°C) ≤180°C (T3) (T200°C)	2 off M20 x 1.5 or 2 off ½" NPT

10-30Vdc @ 100mA

The marking of the LVCSi range shall include the following:

 II 1/2G (or 2G) Ex db IIC T\* Ga/Gb (or Gb) -40°C ≤ T<sub>amb</sub> ≤+85°C

Certificate: ExVeritas 17ATEX0301X

Issue 2


This certificate may only be reproduced in its entirety and without any change, schedule included.

For help or assistance relating to this certificate, contact [info@exveritas.com](mailto:info@exveritas.com).

ExVeritas ApS, Severinsmindevej 6, 4420 Regstrup, Denmark.

ExVeritas® is a registered trademark, unauthorised use will lead to prosecution.

## Schedule

 II 2 D Ex tb IIIC T\* Db  $-40^{\circ}\text{C} \leq T_{\text{amb}} \leq +85^{\circ}\text{C}$

### 13.2 Details of changes

- Transfer of the certificate from ExVeritas UK, Notified Body number 2585 to ExVeritas Denmark, Notified Body number 2804. Certificate number remains unchanged.

## 14 Descriptive Documents

### 14.1 Associated Report and Certificate History:

Report Number	Cert Issue Date	Issue	Comment
R1288/A/1	14/12/2017	0	Initial issue of the Prime Certificate
R2757/A/1	24/09/2020	1	Issue of the first variation.
EXV4121A	15/09/2022	2	Issue of the second variation.

### 14.2 Compliance Drawings:

Number	Date	Issue	Description
D 600779	29/11/2017	2	LVCS FP all versions Sheet 1 of 2
D 600779_2	29/11/2017	3	LVCS FP all versions Sheet 2 of 2
D 600781	29/11/2017	2	F/S FP all versions Sheet 1 of 2
D 600781_2	29/11/2017	3	F/S FP all versions Sheet 2 of 2
Dwg 950553	11/8/2017	2	Adaptor 1/2" NPT Long thread to 12mm Sheet 1 of 2
Dwg 950568	11/8/2017	2	Adaptor 1/2" NPT long thread to 8mm Sheet 1 of 2
D600850	11 <sup>th</sup> March 2020	Rev 1	LVCSi FP all versions (Sheets 1 to 2)
-	17/09/2020	-	LVCSi FP manual

## 15 Conditions of Certification

### 15.1 Special Conditions for Safe Use

- When intended to be operating with process temperatures above 85°C, the sensor head shall be sufficiently cooled to keep it below 80°C. See installation manual for details.
- The LVCSi may be operated with process temperatures down to -55°C, when used at temperatures below -40°C, the sensor head shall be kept at a temperature of at least -40°C. See installation manual for details.
- Refer to manual for cable entry thread size and type.

### 15.2 Conditions for Use

- The LVCS FP and F/S FP range of sensors are subject to a routine tests on production in accordance with clause 16 of EN/IEC 60079-1 to a pressure of at least 57.2 Bar.
- The level guide assembly of the LVCSi FP shall be subject to a routine over pressure test in accordance with clause 16 of EN/IEC 60079-1 to a pressure of at least 17.2 Bar.
- The equipment covered under this certificate incorporates previously certified components, it is therefore the responsibility of the manufacturer to monitor the status of the certification of these components and inform ExVeritas of any changes that may affect the explosion safety design of their products.

Certificate: ExVeritas 17ATEX0301X

Issue 2

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## Schedule

### 16 Essential Health and Safety Requirements

Essential Health and Safety Requirements are addressed by the standards listed in section 9 and where required the report listed in section 14.1

The manufacturer shall inform the Notified Body of any modifications to the design of the product described by this schedule.

Certificate: ExVeritas 17ATEX0301X

Issue 2

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# IECEX Certificate of Conformity

## INTERNATIONAL ELECTROTECHNICAL COMMISSION IEC Certification System for Explosive Atmospheres

for rules and details of the IECEx Scheme visit [www.iecex.com](http://www.iecex.com)

Certificate No.: **IECEX EXV 17.0030X** Page 1 of 6 [Certificate history:](#)  
Issue 0 (2017-12-19)

Status: **Current** Issue No: 1

Date of Issue: 2020-09-25

Applicant: **Deeter Electronics Limited**  
Deeter House, Valley Road  
Hughenden Valley  
High Wycombe  
Bucks  
HP14 4LW  
United Kingdom

Equipment: **Liquid Vertical Continuous Sensor, Flameproof (LVCS FP) and Float Switch, Flameproof (F/S FP)**

Optional accessory:

Type of Protection: **Equipment protection by flameproof enclosure "d", Equipment with EPL Ga and Equipment dust ignition protection by enclosure "t"**

Marking: Ex db IIC T\* Ga/Gb or Ex db IIC T\* Gb  $-50^{\circ}\text{C} \leq \text{Tamb} \leq +85^{\circ}\text{C}$   
Ex tb IIIC \*°C Db  $-40^{\circ}\text{C} \leq \text{Tamb} \leq +85^{\circ}\text{C}$

Approved for issue on behalf of the IECEx  
Certification Body:

**S Clarke CEng MSc MIET**

Position:

**Certification Manager**

Signature:  
(for printed version)

Date:

1. This certificate and schedule may only be reproduced in full.
2. This certificate is not transferable and remains the property of the issuing body.
3. The Status and authenticity of this certificate may be verified by visiting [www.iecex.com](http://www.iecex.com) or use of this QR Code.



Certificate issued by:

**ExVeritas Limited**  
Units 16-18 Abenbury Way  
Wrexham Ind. Est.  
Wrexham LL 139UZ  
United Kingdom







# IECEX Certificate of Conformity

Certificate No.: **IECEX EXV 17.0030X**

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Date of issue: 2020-09-25

Issue No: 1

Manufacturer: **Deeter Electronics Limited**  
Deeter House, Valley Road  
Hughenden Valley  
High Wycombe, Bucks, HP14 4LW  
**United Kingdom**

Additional  
manufacturing  
locations:

This certificate is issued as verification that a sample(s), representative of production, was assessed and tested and found to comply with the IEC Standard list below and that the manufacturer's quality system, relating to the Ex products covered by this certificate, was assessed and found to comply with the IECEx Quality system requirements. This certificate is granted subject to the conditions as set out in IECEx Scheme Rules, IECEx 02 and Operational Documents as amended

#### STANDARDS :

The equipment and any acceptable variations to it specified in the schedule of this certificate and the identified documents, was found to comply with the following standards

**IEC 60079-0:2017** Explosive atmospheres - Part 0: Equipment - General requirements  
Edition:7.0

**IEC 60079-1:2014-06** Explosive atmospheres - Part 1: Equipment protection by flameproof enclosures "d"  
Edition:7.0

**IEC 60079-26:2014-10** Explosive atmospheres – Part 26: Equipment with Equipment Protection Level (EPL) Ga  
Edition:3.0

**IEC 60079-31:2013** Explosive atmospheres - Part 31: Equipment dust ignition protection by enclosure "t"  
Edition:2

This Certificate **does not** indicate compliance with safety and performance requirements other than those expressly included in the Standards listed above.

#### TEST & ASSESSMENT REPORTS:

A sample(s) of the equipment listed has successfully met the examination and test requirements as recorded in:

Test Reports:

[GB/EXV/ExTR17.0029/00](#)

[GB/EXV/ExTR20.0072/00](#)

Quality Assessment Report:

[GB/SIR/QAR12.0004/07](#)



# IECEx Certificate of Conformity

Certificate No.: **IECEx EXV 17.0030X**

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Date of issue: 2020-09-25

Issue No: 1

## EQUIPMENT:

Equipment and systems covered by this Certificate are as follows:

The LVCS FP (Liquid Vertical Continuous Sensor) and F/S FP (Float Switch) are liquid level sensors with either a continuous analogue or switching output. The equipment comprises of a flameproof, component certified instrument housing with stainless steel level guide which is threaded into the housing. The level guide consists of either an 8mm or 12mm stainless steel tube which contains the sensing electronics. The instrument housing is used for termination and mounting of optional PCB's, depending on the communication and I/O's required. The level guides can be various lengths and are mounted with up to seven stainless steel floats, each containing a magnetic ring. The equipment can be supplied with an optional threaded adaptor or equivalent gas tight seal for mounting across a boundary of two hazardous area zones.

When connected to process temperatures above 85°C, the instrument housing must be sufficiently cooled to keep it below 80°C, as detailed in the manufacturer's instructions.

The following temperature classes are applicable based on the process temperature which the equipment is connected to:

Model	Level guide length (mm)	Sensing device	Input/Output Options	Process Temperature and associated temperature class	Cable Entry sizes
LVCS	100 to 6000	Reed switch or Hall effect	Optional PCB's for various input/outputs	≤85°C (T5) (T100°C) ≤125°C (T4) (T135°C) ≤180°C (T3) (T200°C)	M20 x 1.5 or ½" NPT
F/S	60 to 6000	Reed switch or Hall effect	Between 1 to 7 I/O float switches, direct output	≤85°C (T5) (T100°C) ≤125°C (T4) (T135°C) ≤190°C (T3) (T200°C)	M20 x 1.5 or ½" NPT

## SPECIFIC CONDITIONS OF USE: YES as shown below:

- When intended to be operating with process temperatures above 85°C, the sensor head shall be sufficiently cooled to keep it below 80°C. See installation manual for details.
- The LVCSi may be operated with process temperatures down to -55°C, when used at temperatures below -40°C, the sensor head shall be kept at a temperature of at least -40°C. See installation manual for details.
- Refer to manual for cable entry thread size and type.



# IECEx Certificate of Conformity

Certificate No.: **IECEx EXV 17.0030X**

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Date of issue: 2020-09-25

Issue No: 1

## Equipment (continued):

The following ratings are applicable:

- 0 to 2v output. 5 to 25vdc input @ 25mA
- 0 to 4 v output. 7 to 25Vdc input @ 25mA
- 0 to 10v output. 14 to 28vdc input @ 35mA
- 8 to 28vdc input @30mA Multi interface 4-20mA, voltage output
- 0-50VDC 0-240V AC 1Amp (F/S FP reed switch only)

## Routine Tests:

- The LVCS FP and F/S FP range of sensors are subject to a routine tests on production in accordance with clause 16 of EN/IEC 60079-1 to a pressure of at least 57.2 Bar.
- The equipment covered under this certificate incorporates previously certified components, it is therefore the responsibility of the manufacturer to monitor the status of the certification of these components and inform ExVeritas of any changes that may affect the explosion safety design of their products.
- The level guide assembly of the LVCSi shall be subject to a routine over pressure test in accordance with clause 16 of EN/IEC 60079-1 to a pressure of at least 16.3 Bar.



# IECEx Certificate of Conformity

Certificate No.: **IECEx EXV 17.0030X**

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Date of issue: 2020-09-25

Issue No: 1

### DETAILS OF CERTIFICATE CHANGES (for issues 1 and above)

The following changes are introduced:

- Update to IEC 60079-0 Edition 7.0
- Inclusion of the LVCSi range Vertical Liquid Level Sensor with integrated display and optional temperature sensor.

Model	Level guide length (mm)	Sensing device	Input/Output Options	Process Temperature and associated temperature class	Cable Entry sizes
LVCSi	100 to 6000	Reed switch or Hall effect, Optional temperature sensor	Optional PCB's for various input/outputs	≤85°C (T5) (T100°C) ≤125°C (T4) (T135°C) ≤180°C (T3) (T200°C)	2 off M20 x 1.5 or 2 off 1/2" NPT

Rating - 10-30Vdc @ 100mA

The marking of the LVCSi range shall include the following:

Ex db IIC T\* Ga/Gb (or Gb) -40°C ≤ Tamb ≤ +85°C

Ex tb IIIC T\* Db -40°C ≤ Tamb ≤ +85°C



# IECEx Certificate of Conformity

Certificate No.: **IECEx EXV 17.0030X**

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Date of issue: 2020-09-25

Issue No: 1

**Additional information:  
Technical Documents:**

<b>Title:</b>	<b>Drawing No.:</b>	<b>Rev. Level:</b>	<b>Date:</b>
LVCSi FP all versions Sheets 1 to 2)	D600850	Rev 1	11 <sup>th</sup> March 2020
LVCSi FP manual	-	-	17/09/2020