

Translation

EU-Type Examination Certificate Supplement 3

Change to Directive 2014/34/EU

Equipment intended for use in potentially explosive atmospheres
Directive 2014/34/EU

EU-Type Examination Certificate Number: **BVS 09 ATEX E 030**

Product: **Level limit switch Solicap S series FTI77***

Manufacturer: **Endress+Hauser SE+Co. KG**

Address: **Hauptstr. 1, 79689 Maulburg, Germany**

This supplementary certificate extends EC-Type Examination Certificate No. BVS 09 ATEX E 030 to apply to products designed and constructed in accordance with the specification set out in the appendix of the said certificate but having any acceptable variations specified in the appendix to this certificate and the documents referred to therein.

DEKRA Testing and Certification GmbH, Notified Body number 0158, in accordance with Article 17 of Directive 2014/34/EU of the European Parliament and of the Council, dated 26 February 2014, certifies that this product has been found to comply with the Essential Health and Safety Requirements relating to the design and construction of products intended for use in potentially explosive atmospheres given in Annex II to the Directive.

The examination and test results are recorded in the confidential Report No. BVS PP 09.2041 EU.

The Essential Health and Safety Requirements are assured in consideration of:

EN IEC 60079-0:2018

General requirements

EN 60079-11:2012

Intrinsic Safety "i"

EN 60079-31:2014

Protection by Enclosure "t"

If the sign "X" is placed after the certificate number, it indicates that the product is subject to the Special Conditions for Use specified in the appendix to this certificate.

This EU-Type Examination Certificate relates only to the design and construction of the specified product. Further requirements of the Directive apply to the manufacturing process and supply of this product. These are not covered by this certificate.

The marking of the product shall include the following:



II 1D Ex ia IIIC T80°C T₂₀₀130°C Da
II 1/2D Ex ia IIIC T80°C T₂₀₀130°C Da/Db
II 1/3D Ex ia IIIC T80°C T₂₀₀130°C Da/Dc

FTI77- F***H/5/7/8******



II 1/2D Ex ia/tb IIIC T90°C Da/Db

FTI77- C***H/1/2/4/5******



II 1/2D Ex ia/tb IIIC T90°C Da/Db

FTI77- B***H/1/2/4/5******

DEKRA Testing and Certification GmbH
Bochum, 2021-01-27

Signed: Jörg-Timm Kilisch

Managing Director



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

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13 **Appendix**
14 **EU-Type Examination Certificate**

BVS 09 ATEX E 030
Supplement 3

15 **Product description**
15.1 **Subject and type**

Series FTI77-*****

Additional option, without relevance for explosion protection

Type of probe

- 1 = compact version
- 2 = separate version 2000 mm L4 cable
- 3 = separate version.. mm L4 cable
- 4 = separate version 80 inch L4 cable
- 5 = separate version ... inch L4 cable

Cable entry

- A = M20 x 1,5
- B = G $\frac{1}{2}$
- C = $\frac{1}{2}$ NPT
- D = $\frac{3}{4}$ NPT
- G = M20 x 1.5

Enclosure

- 1 = F15 316L
- 3 = F17 Alu
- 4 = F13 Alu + gas tight seal
- 5 = T13 Alu + gas tight seal
- 6 = F27 stainless steel + gas tight seal

Electronics, output

H = FEI50H, 4...20mA HART + Display

- 1 = FEI51, 2-wire AC
- 2 = FEI52, 3-wire PNP
- 4 = FEI54, relay, 19-253 VAC, 19-55 VDC
- 5 = FEI55, 8/16mA, only T13 housing and supply module

Process connection

Active probe length L1

- AB = 200 mm, sword, steel
- AC = 400 mm, sword, steel
- AD = 700 mm, sword, steel
- BB = 200 mm, sword, 316L
- BC = 400 mm, sword, 316L
- BR = ... mm, sword, 316L
- CR = ... mm, 6 mm rope, steel zinc coated, tension weight steel
- CS = ... mm, 12 mm rope, steel zinc coated, tension weight steel
- DR = ... mm, 6 mm rope, 316L, tension weight steel
- DS = ... mm, 12 mm rope, 316L, tension weight steel
- * = inch

Inactive length L3

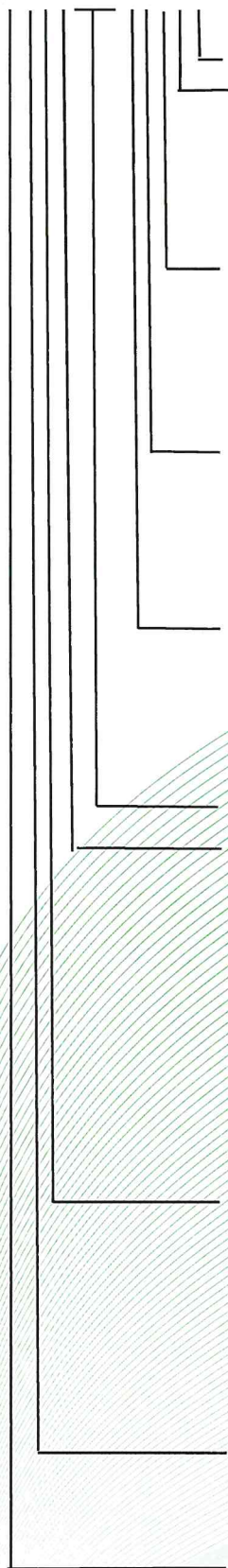
- A = not selected
- B = 200 mm, Stahl
- C = 400 mm, Stahl
- E = 200 mm, 316L
- G = mm, 316L
- H = mm, 316L + 125 mm active build-up
- * = inch

Application

- 1 = fine grained solids
- 2 = coarse solids

Certificate: C = ATEX II 1/2D Ex ia/tb IIIC T90°C Da/Db
B = ATEX II 1/3D Ex ia/tc IIIC T90°C Da/Dc

Serie FTI77-*****



Additional option, without relevance for explosion protection

Sensor type

- 1 = compact version
- 2 = separate version 2000 mm L4 cable
- 3 = separate version .. mm L4 cable
- 4 = separate version 80 inch L4 cable
- 5 = separate version ... inch L4 cable

Cable entry

- A = M20 x 1,5
- B = G $\frac{1}{2}$
- C = $\frac{1}{2}$ NPT
- D = $\frac{3}{4}$ NPT
- G = M20 x 1.5

Enclosure

- 1 = F15 316L
- 3 = F17 Alu
- 4 = F13 Alu + gas tight seal
- 5 = T13 Alu + gas tight seal
- 6 = F27 stainless steel + gas tight seal

Electronics, output

- H = FEI50H, 4...20mA HART + display (only with T13 enclosure)
- 5 = FEI55, 8/16mA
- 7 = FEI57S, 2-wire PFM
- 8 = FEI58; NAMUR

Process connection

Active probe length L1

- AB = 200 mm, sword, steel
- AC = 400 mm, sword, steel
- AD = 700 mm, sword, steel
- BB = 200 mm, sword, 316L
- BC = 400 mm, sword, 316L
- BR = ... mm, sword, 316L
- CR = ... mm, 6 mm rope, steel zinc coated, tension weight steel
- CS = ... mm, 12 mm rope, steel zinc coated, tension weight steel
- DR = ... mm, 6 mm rope, 316L, tension weight steel
- DS = ... mm, 12 mm rope, 316L, tension weight steel
- * = inch

Inactive length L3

- A = not selected
- B = 200 mm, steel
- C = 400 mm, steel
- E = 200 mm, 316L
- G = mm, 316L
- H = mm, 316L + 125 mm active build-up
- * = inch

Application

- 1 = fine grained solids
- 2 = coarse solids

Certificate: F = ATEX II 1D Ex ia IIIC T80°C T₂₀₀130°C Da
ATEX II 1/2D Ex ia IIIC T80°C T₂₀₀130°C Da/Db
ATEX II 1/3D Ex ia IIIC T80°C T₂₀₀130°C Da/Dc

15.2 Description

With this supplement the certificate is changed to Directive 2014/34/EU.
(Annotation: In accordance with Article 41 of Directive 2014/34/EU, EC-Type Examination Certificates referring to 94/9/EC that were in existence prior to the date of application of 2014/34/EU (20 April 2016) may be referenced as if they were issued in accordance with Directive 2014/34/EU. Supplementary Certificates to such EC-Type Examination Certificates, and new issues of such certificates, may continue to bear the original certificate number issued prior to 20 April 2016.)

The Level limit switch Solicap S series FTI77* consists of a sensor working on a capacitive basis (rope- or sword) and an electronics enclosure.

The sensor circuit is intrinsically safe.

The sensor corresponds EPL Da, the electronics enclosure EPL Da, Db or Dc.

The Level limit switch can either be carried out in a compact version or in a version with separate housing.

Reasons for the supplement:

- Change to Directive 2014/34/EU
- Updating to the current standards

15.3 Parameters

15.3.1 Electrical data

15.3.1.1 FTI77- ***** H *****

With electronics insert type FEI50H with display type D62 according BVS PP 05.2055 EG

Input-/signal circuit (terminals 1 – 2)

Power supply intrinsically safe

Voltage	U_i	DC	30	V
Current	I_i		120	mA
Power	P_i		1	W
Effective internal inductance	L_i		negligible	
Effective internal capacitance	C_i		2.4	nF

Probe circuit (connector D900), type of protection Ex ia IIC

Voltage	U_o		9.93	V
Current	I_o		21.1	mA
Power	P_o		60	mW

Display-circuits (connector X300), type of protection Ex ia IIC

Voltage	U_o	DC	11.77	V
Current	I_o		65	mA
Power	P_o		190	mW

15.3.1.2 FTI77- ***** 7 *****

With electronics insert type FEI57S according to BVS PP 06.2063 EG

Input / signal circuit (terminals 1 – 2)

Power supply intrinsically safe

Voltage	U_i	DC	16.1	V
Current	I_i		100	mA
Power	P_i		1	W
Effective internal inductance	L_i		negligible	
Effective internal capacitance	C_i		2.4	nF

Probe circuit (connector X300), type of protection Ex ia IIC

Voltage	U_o		9.93	V
Current	I_o		34	mA
Power	P_o		100	mW

15.3.1.3 FTI77-*****5****

With electronics insert type FEI55 according to BVS PP 06.2064 EG

Input / signal circuit (terminals 1 – 2)

Power supply intrinsically safe

Voltage	U_i	DC	36	V
Current	I_i		100	mA
Power	P_i		1	W
Effective internal inductance	L_i		negligible	
Effective internal capacitance	C_i		2.4	nF

Probe circuit (connector X300), type of protection Ex ia IIC

Voltage	U_o		9.93	V
Current	I_o		34	mA
Power	P_o		101	mW

15.3.1.4 FTI77-*****4****

With electronics insert type FEI54 according to BVS PP 06.2088 EG

Input circuit (terminals 1 (L+) – 2 (L-))

Voltage		DC	19...55	V
		AC	19...253	V
Max.voltage	U_m	AC	253	V
Relay contact circuits (terminals 3 – 5 and 6 -8)				
Voltage		AC	253	V
Current			6	A
Power ($\cos \varphi \geq 0.7$)			750	VA
or				
Voltage		DC	30 / 125	V
Current			6 / 0.2	A

Probe circuit (connector X300), type of protection Ex ia IIC

Voltage	U_o		9.93	V
Current	I_o		36	mA
Power	P_o		99	mW

15.3.1.5 FTI77-*****2****

with electronics insert type FEI52 according to BVS PP 06.2089 EG

Input circuit (terminals 1 (L+) – 2 (L-)) and

Signal circuit (terminals 3 – 2)

Voltage		DC	10...55	V
Max. voltage	U_m	AC	253	V
Probe circuit (connector X300), type of protection Ex ia IIC				
Voltage	U_o		9.93	V
Current	I_o		36	mA
Power	P_o		99	mW

15.3.1.6 FTI77-*****1****

with electronics insert type FEI51 according to BVS PP 07.2109 EG

Input circuit (terminals 1 (L+) – 2 (L-))

Voltage		AC	19...253	V
Max. voltage	U_m	AC	253	V
Sensor circuit (connector X101), type of protection Ex ia IIC				
Voltage	U_o		9.93	V
Current	I_o		36	mA
Power	P_o		99	mW

15.3.1.7 FTI77- ***** 8 *****

With electronics insert type FEI58 according to BVS PP 09.2127 EG

Input circuit (terminals 1 (L+) – 2 (L-))

Power supply intrinsically safe

Voltage

U_i DC 18 V

Current

I_i 52 mA

Power

P_i 170 mW

Effective internal inductance

L_i negligible

Effective internal capacitance

C_i negligible

Sensor circuit (connector X201), type of protection Ex ia IIC

Voltage

U_o 9.93 V

Current

I_o 27.4 mA

Power

P_o 130 mW

15.3.2 Thermal data

15.3.2.1. Series FTI77- 6***** (intrinsic safe supply),

Probe in EPL Da, electronics enclosure in EPL Da, Db or Dc

Ambient temperature range of the electronics enclosure and probe

-50 °C up to +70 °C

Max. surface temperature T

T80 °C T₂₀₀ 130 °C

15.3.2.2. Series FTI5*- 4/5***** (non-intrinsic safe supply),

Probe in EPL Da, electronics enclosure in EPL Db or Dc

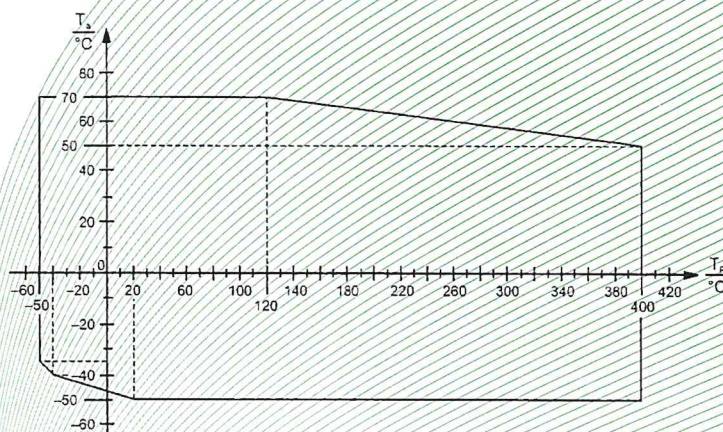
Max. surface temperature at the electronics enclosure

90 °C

Compact version

T_a = ambient temperature

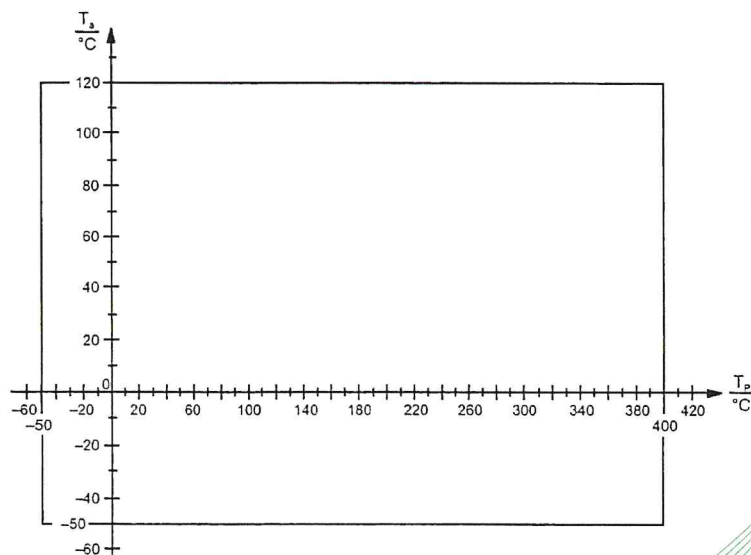
T_p = process temperature



Version with separate housing

T_a = ambient temperature

T_p = process temperature



* Permitted temperature range at the separate housing $-40\text{ °C} \leq T_a \leq +70\text{ °C}$

15.3.3 Degrees of protection of the electronics enclosure according to IEC 60529 IP6X

16 Report Number

BVS PP 09.2041 EU, as of 2021-01-27

17 Special Conditions for Use

None

18 Essential Health and Safety Requirements

The Essential Health and Safety Requirements are covered by the standards listed under item 9.

19 Drawings and Documents

Drawings and documents are listed in the confidential report.

We confirm the correctness of the translation from the German original.
In the case of arbitration only the German wording shall be valid and binding.

DEKRA Testing and Certification GmbH
Bochum, 2021-01-27
BVS-Hk/Mu A20201282



Managing Director