


Translation

(1) EC-Type Examination Certificate

- (2) Equipment and protective systems intended for use in potentially explosive atmospheres - Directive 94/9/EC
- (3) No. of EC-Type Examination Certificate: **BVS 15 ATEX E 086 X**
- (4) Equipment: **Float switch type UniEx.SS x.*.x.x.x.x.x.*.x.*, type UniEx.M x.*.x.x.x.x.x.*.x.x.*, type UniEx.ANM x.*.x.x.*.x.x.* and type UniEx.T x.*.x.*.x.***
- (5) Manufacturer: **Jürgen Engler Steuer- und Meßtechnik**
- (6) Address: **Langestraße 151, 72535 Herolstatt, Germany**
- (7) The design and construction of this equipment and any acceptable variation thereto are specified in the appendix to this type examination certificate.
- (8) The certification body of DEKRA EXAM GmbH, notified body no. 0158 in accordance with Article 9 of the Directive 94/9/EC of the European Parliament and the Council of 23 March 1994, certifies that this equipment has been found to comply with the Essential Health and Safety Requirements relating to the design and construction of equipment and protective systems intended for use in potentially explosive atmospheres, given in Annex II to the Directive. The examination and test results are recorded in the Test and Assessment Report BVS PP 15.2146 EG.
- (9) The Essential Health and Safety Requirements are assured by compliance with:
- EN 60079-0:2012 + A11:2013 General requirements**
EN 60079-11:2012 Intrinsic Safety "i"
EN 60079-26:2015 Equipment protection level (EPL) Ga
- (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 appendix to this certificate.
- (11) This EC-Type Examination Certificate relates only to the design, examination and tests of the specified equipment in accordance to Directive 94/9/EC. Further requirements of the Directive apply to the manufacturing process and supply of this equipment. These are not covered by this certificate.
- (12) The marking of the equipment shall include the following:

 **II 1/2G Ex ia IIC T3...T6 Ga/Gb**
II 1-D Ex ia IIIC T*°C Da
II 1D Ex ia IIIC T*°C Da For details see next page

DEKRA EXAM GmbH
Bochum, dated 2015-08-06

Signed: Simanski

Certification body

Signed: Dr. Wittler

Special services unit

- (13) Appendix to
- (14) **EC-Type Examination Certificate**
BVS 15 ATEX E 086 X
- (15) 15.1 Subject and type

Float switch type	UniEx.SS x.*.x.x.x.x.x.AK.x.* UniEx.M x.*.x.x.x.x.x.AK.x.x.* UniEx.ANM x.*.x.x.AK.x.x.* UniEx.T x.*.x.AK.x.* UniEx.SS x.*.x.x.x.x.x.AS.x.* UniEx.M x.*.x.x.x.x.x.AS.x.x.* UniEx.ANM x.*.x.x.AS.x.x.* UniEx.T x.*.x.AS.x.*	II 1/2 G Ex ia IIC T3...T6 Ga/Gb II 1/- D Ex ia IIIC T* °C Da (* see operating instructions)
	UniEx.SSx.*.x.x.x.x.x.AGN.x.* UniEx.M x.*.x.x.x.x.x.AGN.x.x.* UniEx.ANM x.*.x.x.AGN.x.x.* UniEx.T x.*.x.AGN.x.*	II 1/2 G Ex ia IIC T3...T6 Ga/Gb
	UniEx.SSx.*.*.x.x.x.x.x.AGU.x.* UniEx.M x.*.*.x.x.x.x.AGU.x.x.* UniEx.ANM x.*.*.x.x.AGU.x.x.* UniEx.T x.*.*.AGU.x.*	II 1 D Ex ia IIIC T* °C Da (* see operating instructions)

In the full designation the "*" are replaced by letters and number marking details of the construction

Type UniEx.SS	x	*	x	x	x	x	x	x	*	x	*
	not Ex-relevant	a	not Ex-relevant						b	not Ex-relevant	c

a Diameter of slide tube

12 = 12mm

b Type of process connection

AK = connection with cable

AS = connection with plug

AGU = connection with terminal + non-coated connection housing

AGN = connection with terminal+ coated connection housing

c Temperature switch / temperature sensor

- T600 = normally open (60 °C)
- T60S = normally closed (60 °C)
- T650 = normally open (65 °C)
- T65S = normally closed (65 °C)
- T700 = normally open (70 °C)
- T70S = normally closed (70 °C)
- T750 = normally open (75 °C)
- T75S = normally closed (75 °C)
- T850 = normally open (85 °C)
- T85S = normally closed (85 °C)
- Pt102 = Pt100 2-wire
- Pt103 = Pt100 3-wire
- Pt104 = Pt100 4-wire
- Pt1002 = Pt1000 2-wire
- Pt1003 = Pt1000 3-wire
- Pt1004 = Pt1000 4-wire



Type UniEx.M	x	*	x	x	x	x	x	*	x	x	*
	not Ex relevant	a	not Ex relevant				b	not Ex relevant		c	

a Diameter of slide tube

8 = 8mm

b Type of process connection

AK = connection with cable

AS = connection with plug

AGU = connection with terminal + non-coated connection housing

AGN = connection with terminal+ coated connection housing

c Temperature switch / temperature sensor

T60O = normally open (60 °C)

T60S = normally closed (60 °C)

T65O = normally open (65 °C)

T65S = normally closed (65 °C)

T70O = normally open (70 °C)

T70S = normally closed (70 °C)

T75O = normally open (75 °C)

T75S = normally closed (75 °C)

T85O = normally open (85 °C)

T85S = normally closed (85 °C)

Pt102 = Pt100 2-wire

Pt103 = Pt100 3-wire

Pt104 = Pt100 4-wire

Pt1002 = Pt1000 2-wire

Pt1003 = Pt1000 3-wire

Pt1004 = Pt1000 4-wire

Type UniEx.ANM	x	*	x	x	*	x	x	*
	not Ex relevant	a	not Ex relevant		b	not Ex relevant		c

a Diameter of slide tube

8 = 8mm; 12 = 12mm;

b Type of process connection

AK = connection with cable

AS = connection with plug

AGU = connection with terminal + non-coated connection housing

AGN = connection with terminal+ coated connection housing

c Temperature sensor

Pt102 = Pt100 2-wire

Pt103 = Pt100 3-wire

Pt104 = Pt100 4-wire

Pt1002 = Pt1000 2-wire

Pt1003 = Pt1000 3-wire

Pt1004 = Pt1000 4-wire

Type UniEx.T	x	*	x	*	x	*
	not Ex relevant	a	not Ex relevant	b	not Ex relevant	c

a Diameter of slide tube

8 = 8mm; 12 = 12mm

b Type of process connection

- AK = connection with cable
- AS = connection with plug
- AGU = connection with terminal + non-coated connection housing
- AGN = connection with terminal+ coated connection housing

c Temperature switch / temperature sensor

- T60O = normally open (60 °C)
- T60S = normally closed (60 °C)
- T65O = normally open (65 °C)
- T65S = normally closed (65 °C)
- T70O = normally open (70 °C)
- T70S = normally closed (70 °C)
- T75O = normally open (75 °C)
- T75S = normally closed (75 °C)
- T85O = normally open (85 °C)
- T85S = normally closed (85 °C)
- Pt102 = Pt100 2-wire
- Pt103 = Pt100 3-wire
- Pt104 = Pt100 4-wire
- Pt1002 = Pt1000 2-wire
- Pt1003 = Pt1000 3-wire
- Pt1004 = Pt1000 4-wire

15.2 Description

The float switches of type series UniEx.* serve the purpose of intrinsically safe position and temperature sensing of liquid media in vessels.

A printed circuit board embedded in casting compound is placed inside a metallic tube construction. With reference to model, the printed circuit board is fitted either with standalone reed contacts for limit value control or with a reed contact- / resistor chain for continuous level measurement.

The float switches fitted optionally with bi-metal switches or Pt100 / Pt1000 (type L 220) resistors for temperature limit value control or continuous temperature measuring of the medium.

The electrical connection of the versions with resistance sensors is provided in two-, three- or four- wire technology.

The limit values or level values are transferred into the IS circuit by means of a float (or several floats) providing ring-magnets inside, which operate the reed contacts.

15.3 Parameters

15.3.1 Variants type UniEx.SS x.*.x.x.x.x.AGU.x.*, type UniEx.M x.*.x.x.x.x.AGU.x.x.*, type UniEx.ANM x.*.x.x.AGU.x.x.* and type UniEx.T x.*.AGU.x.* for applications in areas with 1D - requirements.

15.3.1.1 Variants with one Pt100 resp.one Pt1000 resistor 2-wire, 3-wire, 4-wire measuring circuit.

Maximum input voltage	U_i	DC	30	V
Maximum input current	I_i		100	mA
Maximum input power	P_i	in accordance with the following table		
Internal effective capacitance	C_i			negligible
Internal effective inductance	L_i			negligible

Power P_i	Ambient temperature range T_a at the connection head	Max. surface T temperature at the connection head	Max. surface temperature T at the probe head **)
750 mW*)	-20 °C up to + 40 °C	45 °C	Process temperature + 27 K
650 mW*)	-20 °C up to + 70 °C	75 °C	Process temperature + 23 K
550 mW*)	-20 °C up to + 100 °C	105 °C	Process temperature + 20 K

*) Sum value in case of two Pt100 resp. two Pt1000 resistors

**) The max. surface temperature T at the probe head shall not exceed the operating temperature of resistor Pt100 / Pt1000 type TO92 (up to 150 °C).

15.3.1.2 Variants with one temperature switch

Maximum input voltage	U_i	DC	30	V
Maximum input current	I_i		100	mA
Maximum input power	P_i	in accordance with the following table		
Internal effective capacitance	C_i	negligible		
Internal effective inductance	L_i	negligible		

Power P_i	Ambient temperature range T_a at the connection head	Max. surface T temperature at the connection head	Max. surface temperature T at the probe head **)
750 mW	-20 °C up to + 40 °C	45 °C	Process temperature + 10 K
650 mW	-20 °C up to + 70 °C	75 °C	Process temperature + 10 K
550 mW	-20 °C up to + 100 °C	105 °C	Process temperature + 10 K

**) The max. surface temperature T at the probe head shall not exceed the operating temperature of resistor Pt100 / P1000 type TO92 (up to 150 °C).

15.3.2 Variants type UniEx.SS x.*.x.x.x.x.x.AK.x.*, type UniEx.M x.*.x.x.x.x.x.AK.x.x.*, type UniEx.ANM x.*.x.x.AK.x.x.*, type UniEx.T x.*.x.AK.x.*, type UniEx.SS x.*.x.x.x.x.x.AS.x.*, type UniEx.M x.*.x.x.x.x.x.AS.x.x.*, type UniEx.ANM x.*.x.x.AS.x.x.*, type UniEx.T x.*.x.AS.x.*, type UniEx.SS x.*.x.x.x.x.x.AGN.x.*, type UniEx.M x.*.x.x.x.x.x.AGN.x.x.*, type UniEx.ANM x.*.x.x.AGN.x.x.* and type UniEx.T x.*.x.AGN.x.* for applications in areas with 1/2G-requirements.

15.3.2.1 Variants with one Pt100 resp. one Pt1000 resistor 2-wire, 3-wire, 4-wire resp. 2x2-wire, 2x3-wire, 2x4-wire measuring circuit

Maximum input voltage	U_i	DC	30	V
Maximum input current	I_i		100	mA
Maximum input power	P_i	in accordance with the following table		
Internal effective capacitance	C_i	capacitance of the permanently connected cable		
Internal effective inductance	L_i	inductance of the permanently connected cable		
For the variants type UniEx.SS x.*.x.x.x.x.x.AK.x.*, type UniEx.M x.*.x.x.x.x.x.AK.x.x.*, type UniEx.ANM x.*.x.x.AK.x.x.* and type UniEx.T x.*.x.AK.x.*, the following values apply:				
Cable capacitance	C_c		160	pF/m
Cable inductance	L_c		0.7	µH/m

Ambient temperature range of the connection head resp. the connecting cable:

- 20 °C up to +70 °C for temperature class T3 and T4
- 20 °C up to +55 ° for temperature class T5
- 20 °C up to +40 °C for temperature class T6

Permissible process temperatures in °C depending on the maximum input power P_i and the temperature class:

Temperature class	$P_i = 750 \text{ mW}^*)$
T3**	148
T4	103
T5	73
T6	53

*) Sum value in case of two Pt100 resp. two Pt1000 resistors

***) The operating temperature of resistor Pt100/Pt1000 type TO92 (up to 150 °C).

Through appropriate measures, eg. by corresponding selection of the length of tube, a decoupling of the temperature of the connection head and the connecting cable of the process temperature has to be ensured.

15.3.2.2 Variants with one temperature switch

Maximum input voltage	U_i	DC	30	V
Maximum input current	I_i		100	mA
Maximum input power	P_i	in accordance with the following table		
Internal effective capacitance	C_i	capacitance of the permanently connected cable		
Internal effective inductance	L_i	inductance of the permanently connected cable		
For the variants type UniEx.SS x.*.x.x.x.x.x.AK.x.* , type UniEx.M x.*.x.x.x.x.x.AK.x.x.* , type UniEx.ANM x.*.x.x.AK.x.x.* and type UniEx.T x.*.x.AK.x.* , the following values apply:				
Cable capacitance	C_c		160	pF/m
Cable inductance	L_c		0.7	µH/m

Ambient temperature range of the connection head resp. the connecting cable:

-20 °C up to +70 ° for temperature class T3 and T4

-20 °C up to +55 °C for temperature class T5

-20 °C up to +40 °C for temperature class T6

Permissible process temperatures in °C depending on the maximum input power P_i and the temperature class:

Temperature class	$P_i = 800 \text{ mW}$
T3*	147
T4	102
T5	72
T6	52

*) The operating temperature of resistor Pt100 / Pt1000 type TO92 (up to 150 °C).

15.3.3 Variants type UniEx.SS x.*.x.x.x.x.x.AK.x.* , type UniEx.M x.*.x.x.x.x.x.AK.x.x.* , type UniEx.ANM x.*.x.x.AK.x.x.* , type UniEx.T x.*.x.AK.x.* , type UniEx.SS x.*.x.x.x.x.x.AS.x.* , type UniEx.M x.*.x.x.x.x.x.AS.x.x.* , type UniEx.ANM x.*.x.x.AS.x.x.* and type UniEx.T x.*.x.AS.x.* , for applications in areas with 1/- D-requirements.

- 15.3.3.1 Variants with one Pt100 resp. one Pt1000 resistor 2-wire, 3-wire, 4-wire resp. 2x2-wire, 2x3-wire, 2x4-wire measuring circuit
- | | | | | |
|-----------------------|-------|--|-----|----|
| Maximum input voltage | U_i | DC | 30 | V |
| Maximum input current | I_i | | 100 | mA |
| Maximum input power | P_i | in accordance with the following table | | |

Power P_i	Ambient temperature range T_a at the connection head	Max. surface T temperature at the connection head	Max. surface temperature T at the probe head **)**
750 mW*)	-20 °C up to + 40 °C	45 °C	Process temperature + 27 K
650 mW*)	-20 °C up to + 70 °C	75 °C	Process temperature + 23 K
550 mW*)	-20 °C up to + 100 °C	105 °C	Process temperature + 20 K

*) Sum value in case of two Pt100 resp. two Pt1000 resistors

**) The max. surface temperature T at the probe head shall not exceed the operating temperature of resistor Pt100 / Pt1000 type TO92 (up to 150 °C).

The permanently connected cable is installed outside the hazardous area, hence the internal effective capacitance C_i and the internal effective inductance L_i are not considered.

- 15.3.3.2 Ausführungen mit einem Temperaturschalter / Variants with one temperature switch

Maximum input voltage	U_i	DC	30	V
Maximum input current	I_i		100	mA
Maximum input power	P_i	in accordance with the following table		

Power P_i	Ambient temperature range T_a at the connection head	Max. surface T temperature at the connection head	Max. surface temperature T at the probe head **)**
750 mW	-20 °C up to + 40 °C	45 °C	Process temperature + 10 K
650 mW	-20 °C up to + 70 °C	75 °C	Process temperature + 10 K
550 mW	-20 °C up to + 100 °C	105 °C	Process temperature + 10 K

**) The max. surface temperature T at the probe head shall not exceed the operating temperature of resistor Pt100 / Pt1000 type TO92 (up to 150 °C).

The permanently connected cable is installed outside the hazardous area, hence the internal effective capacitance C_i and the internal effective inductance L_i are not considered.

(16) Test and Assessment Report

BVS PP 15.2146 EG as of 2015-08-06

(17) Special conditions for safe use

- 17.1 Permissible ambient temperature range / process temperature see specifications.
- 17.2 Metallic process connection parts have to be earthed and mounted at the mounting location electrostatically conductive (< 1 M Ω).
- 17.3 For the variants with a permanently connected cable the connection cable must be protected against mechanical damage.
- 17.4 All variants should be used only in combination with liquids that have a high conductivity (> 800 pS/m) and grounded.
- 17.5 The wall thickness of the float switch is 0.2 mm < t < 1 mm. The device may not be exposed to environmental conditions which may negatively affect the partition wall.

