



EU-TYPE-EXAMINATION CERTIFICATE

(Translation)

- (1)
- (2) Equipment or Protective Systems Intended for Use in Potentially Explosive Atmospheres - **Directive 2014/34/EU**
- (3) EU-Type Examination Certificate Number:

PTB 03 ATEX 2214 X

Issue: 01

- (4) Product: Ultrasonic sensors VEGASON type series SN6*(*)CX**P/F****
- (5) Manufacturer: VEGA Grieshaber KG
- (6) Address: Am Hohenstein 113, 77761 Schiltach, Germany
- (7) This product and any acceptable variation thereto is specified in the schedule to this certificate and the documents therein referred to.
- (8) The Physikalisch-Technische Bundesanstalt, notified body No. 0102 in accordance with Article 17 of the 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 Test Report PTB Ex 23-29043.
- (9) Compliance with the Essential Health and Safety Requirements has been assured by compliance with:
EN IEC 60079-0:2018 +AC:2020 EN 60079-11:2012 EN 60079-26:2015
- (10) If the sign "X" is placed after the certificate number, it indicates that the product is subject to the Specific Conditions of Use specified in the schedule to this certificate.
- (11) This EU-Type Examination Certificate relates only to the design and construction of the specified product in accordance to the Directive 2014/34/EU. Further requirements of the Directive apply to the manufacturing process and supply of this product. These are not covered by this certificate.
- (12) The marking of the product shall include the following:

 **II 1 G Ex ia IIC T6...T1 Ga or**
II 1/2 G Ex ia IIC T6...T1 Ga/Gb or
II 2 G Ex ia IIC T6...T1 Gb

Konformitätsbewertungsstelle Sektor Explosionsschutz
On behalf of PTB:

Braunschweig, April 17, 2023

Dr.-Ing. M. Thedens
Direktor und Professor



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EU-Type Examination Certificates without signature and official stamp shall not be valid. The certificates may be circulated only without alteration. Extracts or alterations are subject to approval by the Physikalisch-Technische Bundesanstalt. In case of dispute, the German text shall prevail.

SCHEDULE

(13)

(14) **EU-Type Examination Certificate Number PTB 03 ATEX 2214 X, Issue: 01**

(15) Description of Product

The ultrasonic sensors VEGASON type series SN6*(*)CX**P/F**** consist of an electronics housing with the associated evaluation electronics with built-in electronics insert with Profibus PA or Foundation Fieldbus electronics, with a process connection element and a sensor, are installed for level measurement in hazardous areas where category 1 or 1/2 or 2 equipment is required. The adjustment and display module with the designation PLICSCOM or PLICSCOM(*)B/W/U* (TÜV 15 ATEX 161127 U) or VEGACONNECT can be built into the housing for parameter adjustment or visualization, or the external display VEGADIS61/81 can be connected.

The working frequencies are 30 kHz for the ultrasonic sensor VEGASON type series SN62.CX**P/F*** and 50 kHz for the ultrasonic sensor VEGASON type series SN61.CX**P/F***.

Extract from the type key:

VEGASON SN6*(*)C

	*	*	*	*	*	*	*	*
	a	b	c	d	e	f	g	h

aa: Area of validity.

CX = ATEX II 1G, 1/2G, 2G Ex ia IIC T6...T1 Ga, Ga/Gb, Gb.

CM = ATEX with ship approval.

CI = IECEx Ex ia IIC T6...T1 Ga, Ga/Gb, Gb.

b: Version / Material

c: Process connection / Material.

d: Electronics.

P = Profibus PA

F = Foundation Fieldbus FF.

e: Enclosure / Protection.

f: Cable gland / Plug connection

g: Display / Adjustment module PLICSCOM.

h: Additional equipment.

The full type code can be found in the safety instructions.

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EU-Type Examination Certificates without signature and official stamp shall not be valid. The certificates may be circulated only without alteration. Extracts or alterations are subject to approval by the Physikalisch-Technische Bundesanstalt. In case of dispute, the German text shall prevail.

SCHEDULE TO EU-TYPE EXAMINATION CERTIFICATE PTB 03 ATEX 2214 X, Issue: 01

Category 1-equipment

The ultrasonic sensors are installed in potentially explosive atmospheres requiring category 1-equipment.

Category-1/2 equipment

The electronics housing is installed in potentially explosive atmospheres requiring category-2 equipment. The process connectors are installed in the partition separating areas requiring category-2 or category-1 equipment. The sensor is installed in the potentially explosive atmosphere for category-1 equipment.

Category-2 equipment

The ultrasonic sensors are installed in potentially explosive atmospheres requiring category-2 equipment.

For the relationship between the temperature class, the maximum permissible temperature at the sensor and the maximum permissible ambient temperature for the electronic system, reference is made as follows:

Ultrasonic- sensors VEGASON SN6*(*)CXP/F****:**

For the relationship between the temperature class, the maximum permissible temperature at the sensor and the maximum permissible ambient temperature for the different type series VEGASON SN6*(*)CX**P/F**** must be observed from the safety instruction document no. 45131-DE, clause 12.

Category 1-Equipment

For applications requiring category-1 equipment, the media process pressure has to be between 80 kPa and 110 kPa (0,8 bar and 1,1 bar). For the process conditions without explosive mixtures, reference shall be made to the specifications provided by the manufacturer. For further information refer to the safety instruction document.

Category 1/2-equipment

The process pressure of the media for use with required category 1/2-equipment must be in the range of 80 kPa and 110 kPa (0,8 bar and 1,1 bar).

When the ultrasonic sensors are operated with higher temperatures than indicated in the safety instructions, it shall be guaranteed by suitable measures that no ignition hazard is caused by hot surfaces. In this case the maximum permissible temperature at the electronics / the housing shall not exceed the respective values provided in the safety instructions. In the process it shall be considered that the measuring sensor (even in case of failure) does not show any self-heating and that the operator is responsible for the safe operation of the plant regarding the pressures / temperatures of the materials used. For further information refer to the safety instruction document.

Category 2-equipment

When the ultrasonic sensors are operated with higher temperatures than indicated in the safety instructions, it shall be guaranteed by suitable measures that no ignition hazard is caused by hot surfaces. In this case the maximum permissible temperature at the electronics / the housing shall not exceed the respective values provided in the safety instructions. In the process it shall be considered that the measuring sensor (even in case of failure) does not show any self-heating and that the operator is responsible for the safe operation of the plant regarding the pressures / temperatures of the materials used. For further information refer to the safety instruction document.

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SCHEDULE TO EU-TYPE EXAMINATION CERTIFICATE PTB 03 ATEX 2214 X, Issue: 01

The operating conditions in operation without explosive mixtures can be found in the manufacturer's instructions. Further information can be found in the safety instructions.

Electrical data

Supply and signal circuit
(terminals 1[+] & 2[-] in the electronics compartment, for the 2-cell enclosure version in the terminal compartment)

in type of protection Intrinsic Safety Ex ia IIC
For connection to a certified intrinsically safe circuit.

Maximum values:

$$U_i = 17.5 \text{ V}$$

$$I_i = 500 \text{ mA}$$

$$P_i = 5.5 \text{ W}$$

C_i negligibly small.

$$L_i \leq 5 \mu\text{H}.$$

The instrument is suitable for connection to a Fieldbus system according to the FISCO model, e.g. Profibus PA, Foundation Fieldbus

or:

$$U_i = 24 \text{ V}$$

$$I_i = 250 \text{ mA}$$

$$P_i = 1.2 \text{ W}$$

C_i negligibly small or in the version with fixed cable,

$$C_i = C'_{\text{core/core}} = 159 \text{ pF/m} + C'_{\text{core/screen}} = 270 \text{ pF/m}$$

$$L_i \leq 5 \mu\text{H} \text{ or in the version with fixed cable}$$

$$L_i = L' (0,55 \mu\text{H/m}) + 5 \mu\text{H}.$$

Control and display circuit
(terminals No. 5,6,7,8 in the electronics compartment or plug connector for the 2-cell version)

in type of protection Intrinsic Safety Ex ia IIC
For connection to the intrinsically safe supply and signal circuit of the external VEGADIS81 display unit (PTB 02 ATEX 2136 X).

The rules for interconnection of intrinsically safe circuits between the ultrasonic sensor VEGASON type series SN6*.CX**P/F*** and the external VEGADIS81 display unit are complied with if the total inductance and capacitance of the connecting line between the ultrasonic sensor VEGASON type series SN6*.CX**-P/F *** and VEGADIS81 $L_{\text{cable}} = 100 \mu\text{H}$ and $C_{\text{cable}} = 2.8 \mu\text{F}$ is not exceeded.

SCHEDULE TO EU-TYPE EXAMINATION CERTIFICATE PTB 03 ATEX 2214 X, Issue: 01

A control and display module (PLICSCOM or PLICSCOM 2) installed in the VEGASON type series SN6*.CX**P/F*** and a connected VEGACONNECT have been considered.

By using of the provided VEGA connecting cable between VEGASON series SN6*.CX**P/F*** and the external display unit VEGADIS61/81 the following cable inductance and cable capacitance are taken into consideration from a length > 50 m:

$$L_i' = 0.62 \mu\text{H/m}$$

$$C_{i' \text{ core/core}} = 132 \text{ pF/m}$$

$$C_{i' \text{ core/screen}} = 208 \text{ pF/m}$$

$$C_{i' \text{ screen/screen}} = 192 \text{ pF/m}$$

Communication circuit
(I²C-bus socket in the electronics compartment, and additionally for the 2-cell housing version in the terminal compartment)

in type of protection Intrinsic Safety Ex ia IIC
Only for connection to the intrinsically safe signal circuit of a VEGACONNECT interface converter (PTB 01 ATEX 2007, PTB 07 ATEX 2013 X).

Control and display module circuit
(spring contacts in the electronics compartment, additionally for the 2-cell housing version in the terminal compartment.)

in type of protection Intrinsic Safety Ex ia IIC
For connection to the VEGA control and display module PLICSCOM or PLICSCOM*B/W/U (TÜV 15 ATEX 161127 U) or VEGACONNECT (PTB 07 ATEX 2013 X).
With the 2-cell housing version, the control and terminal display module may be housed either in the electronics compartment or the terminal compartment.

The metal elements of the ultrasonic sensors are electrically connected to the earth terminals.

The intrinsically safe supply and signal circuit is safely electrically isolated from elements that may be earthed.

Modifications to the EC-Type-Examination Certificate:

Update to aforementioned standard versions of EN IEC 60079-0, EN 60079-11 and EN 60079-26:2015.

Changes include an extension to the model code.

SCHEDULE TO EU-TYPE EXAMINATION CERTIFICATE PTB 03 ATEX 2214 X, Issue: 01

Consideration of the EU-Type Examination Certificate TÜV 15 ATEX 161127 U for the inclusion of display – and adjustment module PLICSCOM or PLICSCOM(*) *B/W/U* (TÜV 15 ATEX 161127 U) in the “Ex-i” compartment with additional operating modes.

(16) Test Report PTB Ex 23-29043

(17) Specific conditions of use

- 1) The ultrasonic sensors VEGASON type series SN6*(*)CX**P/F**** which include the material aluminium, shall be installed in such a way that sparking as a result of impact or friction between aluminium and steel (with the exception of stainless steel if the presence of rust particles can be excluded) is excluded.
- 2) The ultrasonic sensors with plastic enclosure, metal enclosure with display window, with enclosure parts made of plastic as well as sensors including surfaces that can become charged electrostatically (note warning label).
- 3) When used as category 1- or category ½ equipment, the ultrasonic sensors shall be connected to the equipotential bonding conductor (contact resistance $\leq 1\text{M}\Omega$) (e.g. using the earthing terminal) in order to prevent metal elements from being charged electrostatically.
- 4) For applications where equipment of category 1 or category ½ is required, all parts of the ultrasonic sensors which are in contact with the medium must only be used in such media, against which the materials are sufficiently resistant.

(18) Essential health and safety requirements

Met by compliance with the aforementioned standards.

According to Article 41 of Directive 2014/34/EU, EC-type examination certificates which have been issued according to Directive 94/9/EC prior to the date of coming into force of Directive 2014/34/EU (April 20, 2016) may be considered as if they were issued already in compliance with Directive 2014/34/EU. By permission of the European Commission supplements to such EC-type examination certificates and new issues of such certificates may continue to hold the original certificate number issued before April 20, 2016.

Konformitätsbewertungsstelle, Sektor Explosionsschutz

Braunschweig, April 17, 2023

On behalf of PTB:

Dr.-Ing. M. Thedens
Direktor und Professor



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(1) EC-TYPE-EXAMINATION CERTIFICATE (Translation)

- (2) Equipment and Protective Systems Intended for Use in
Potentially Explosive Atmospheres - **Directive 94/9/EC**

- (3) EC-type-examination Certificate Number:



PTB 03 ATEX 2214 X

- (4) Equipment: Ultrasonic sensor, type series VEGASON SN6*.C***P/F***
with integrated electronic assembly SN61-63PA/FF
- (5) Manufacturer: VEGA Grieshaber KG
- (6) Address: Am Hohenstein 113, 77761 Schiltach, Germany
- (7) This equipment and any acceptable variation thereto are specified in the schedule to this certificate and the documents therein referred to.
- (8) The Physikalisch-Technische Bundesanstalt, notified body No. 0102 in accordance with Article 9 of the Council Directive 94/9/EC 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 confidential report PTB Ex 03-23434.

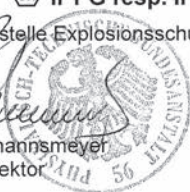
- (9) Compliance with the Essential Health and Safety Requirements has been assured by compliance with:
EN 50014:1997 + A1 + A2 EN 50020:2002 EN 50284:1999
- (10) If the sign "X" is placed after the certificate number, it indicates that the equipment is subject to special conditions for safe use specified in the schedule to this certificate.
- (11) This EC-type-examination Certificate relates only to the design, examination and tests of the specified equipment in accordance to the 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:

(Ex) II 1 G resp. II 1/2 G resp. II 2 G EEx ia IIC T6

Zertifizierungsstelle Explosionsschutz
By order:

Braunschweig, December 05, 2003

Dr.-Ing. U. Johannsmeyer
Regierungsdirektor



SCHEDULE

(13)

(14) **EC-TYPE-EXAMINATION CERTIFICATE PTB 03 ATEX 2214 X**

(15) Description of equipment

The ultrasonic sensor, type series VEGASON SN6*.C***P/F*** with integrated electronic assembly SN61-63PA/FF, are used for level measurement in potentially explosive atmospheres requiring category-1 or category-1/2 or category-2 equipment. The enclosure may be optionally fitted with the control and display module "A/B module" or "PLICSCOM" for either parametration or visualization.

The ultrasonic sensors consists of an electronics housing with the corresponding electronic evaluation system, the process connectors and the sensor.

Category-1 equipment

The ultrasonic sensors are installed in potentially explosive atmospheres requiring category-1 equipment.

Category-1/2 equipment

The electronics housing is installed in potentially explosive atmospheres requiring category-2 equipment. The process connectors are installed in the partition separating areas requiring category-2 or category-1 equipment. The sensor is installed in potentially explosive atmospheres for category-1 equipment.

Category-2 equipment

The ultrasonic sensors are installed in potentially explosive atmospheres requiring category-2 equipment.

For the relationship between the temperature class and the maximum permissible temperature at the sensor and the maximum permissible ambient temperature for the electronic system, reference is made to the following table.

Category-1 equipment

temperature class	temperature at the sensor	ambient temperature for the electronic system
T5	-20 ... +43 °C	-20 ... +43 °C
T4, T3, T2, T1	-20 ... +60 °C	-20 ... +60 °C

For applications requiring category-1 equipment, the media process pressure has to be between 0.8 bar and 1.1 bar. The permissible ambient temperatures specified are based on the 80% rule in section 6.4.2 of EN 1127-1. For the process conditions without explosive mixtures, reference shall be made to the specifications provided by the manufacturer.

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Category-1/2 equipment

temperature class	temperature at the sensor	ambient temperature for the electronic system
T6	-20 ... +58 °C	-40 ... +47 °C
T5	-20 ... +60 °C	-40 ... +62 °C
T4, T3, T2, T1	-20 ... +60 °C	-40 ... +85 °C

For applications requiring category-1/2 equipment, the media process pressure has to be between 0.8 bar and 1.1 bar. The permissible ambient temperatures at the sensor specified are based on the 80% rule in section 6.4.2 of EN 1127-1. For the process conditions without explosive mixtures, reference shall be made to the specifications provided by the manufacturer.

Category-2 equipment

temperature class	temperature at the sensor	ambient temperature for the electronic system
T6	-20 ... +74 °C	-40 ... +47 °C
T5	-20 ... +89 °C	-40 ... +62 °C
T4, T3, T2, T1	-20 ... +90 °C	-40 ... +85 °C

For the permissible operating temperatures and pressures, reference shall be made to the specifications provided by the manufacturer.

Electrical data

Supply and signal circuit
(terminals 1 [+], 2 [-] in the
compartment,
for the 2-cell enclosure
version in the terminal compartment)

category 1 respectively category 1/2

Type of protection Intrinsic Safety EEx ia IIC/IIB

category 2

Type of protection Intrinsic Safety EEx ia IIC/IIB
resp. EEx ib IIC/IIB

For connection to a certified intrinsically safe circuit.

Maximum values:

$$U_i = 17.5 \text{ V}$$

$$I_i = 500 \text{ mA}$$

$$P_i = 5.5 \text{ W}$$

The equipment is suitable for the connection to a field bus system according to FISCO, e.g. PROFIBUS-PA or Foundation Fieldbus
or

$$U_i = 24 \text{ V}$$

$$I_i = 250 \text{ mA}$$

$$P_i = 1.2 \text{ W}$$

	$L_i \leq 5 \mu\text{H}$ C_i negligibly low
Control and display circuit (terminals Nos. 5,6,7,8 in the electronics compartment or plug connector for the 2-cell enclosure version)	Type of protection Intrinsic Safety EEx ia IIC For connection to the intrinsically safe supply and signal circuit of the corresponding external VEGA display unit VEGADIS61 (PTB 02 ATEX 2136 X). The rules for interconnection of intrinsically safe circuits between the ultrasonic sensor, type series VEGASON and the external VEGADIS61 display unit are complied with if the total inductance and capacitance of the connecting line between ultrasonic sensor, type series VEGASON and the external VEGADIS61 display unit ($L_{\text{Kabel}} = 96 \mu\text{H}$ and $C_{\text{Kabel}} = 2.8 \mu\text{F}$) is not exceeded.
	A control and display module (A/B module or PLICSCOM) installed in the ultrasonic sensor, type series VEGASON and a connected VEGACONNECT3 have been considered.
Communication circuit (I ² C-bus socket in the electronics compartment, for the 2-cell enclosure version in additionally the terminal compartment)	Type of protection Intrinsic Safety EEx ia IIC For connection to the intrinsically safe signal circuit of a VEGA VEGACONNECT3 interface converter (PTB 01 ATEX 2007).
Control and display module circuit (spring contacts in the electronics compartment, for the 2-cell enclosure version in additionally the terminal compartment)	Type of protection Intrinsic Safety EEx ia IIC For connection to the VEGA control and display module (A/B module or PLICSCOM). With the 2-cell-enclosure version the operating and display module may either be fitted in the electronics compartment or in the terminal compartment.
The metal elements of the ultrasonic sensors are electrically connected to the earth terminals. The intrinsically safe circuits are safely electrically isolated from elements that may be earthed.	

(16) Test report PTB Ex 03-23434

(17) Special conditions for safe use

1. If used as a category-1 equipment the ultrasonic sensor, type series VEGASON SN6*.C***P/F*** with integrated electronics assembly SN61-63PA/FF, which include the material aluminium, shall be installed in such a way that sparking as a result of impact or friction between aluminium and steel (with the exception of stainless steel if the presence of rust particles can be excluded) is excluded.
2. The ultrasonic sensor with plastic enclosure and parts of enclosures out of plastic as well as the sensors include surfaces that can become charged electrostatically (note warning label).
3. In case of danger of mechanical damage of the sound transducer the ultrasonic sensors VEGASON shall be installed in such a way that the sound transducer is protected against mechanical damage from the environment.

(18) Essential health and safety requirements

met by compliance with the standards mentioned above

Zertifizierungsstelle Explosionsschutz

By order:

Dr.-Ing. U. Johannsmeyer
Regierungsdirektor



Braunschweig, December 05, 2003

1. SUPPLEMENT

according to Directive 94/9/EC Annex III.6

to EC-TYPE-EXAMINATION CERTIFICATE PTB 03 ATEX 2214 X

(Translation)

Equipment: Ultrasonic sensors type series VEGASON SN6*.C***P/F*** with integrated electronic assemblies SN61-63PA/FF

Marking:  II 1 G or II 1/2 G oder II 2 G EEx ia IIC T6

Manufacturer: VEGA Grieshaber KG

Address: Am Hohenstein 113, 77761 Schiltach, Germany

Description of supplements and modifications

The name of the ultrasonic sensor type series VEGASON SN6*.C***P/F*** with integrated electronic assemblies SN61-63 PA/FF is changed into ultrasonic sensor VEGASON type series SN6*.C***P/F*** or SN6*.C_**P/F***.

Other changes concern the internal and the external construction, the electrical data as well as the relationship between the temperature class and the maximum permissible temperature at the sensor and the maximum permissible ambient temperature for the electronic system and the "Special Conditions".

For the relationship between the temperature class and the maximum permissible temperature at the sensor and the maximum permissible ambient temperature for the electronic system, reference is made to the following table.

Category-1 equipment

temperature class	temperature at the sensor	ambient temperature for the electronic system
T5	-20 ... +43 °C	-20 ... +43 °C
T4, T3, T2, T1	-20 ... +60 °C	-20 ... +60 °C

For applications requiring category-1 equipment, the media process pressure has to be between 0.8 bar and 1.1 bar. The permissible ambient temperatures specified are based on the 80 % rule in section 6.4.2 of EN 1127-1. For the process conditions without explosive mixtures, reference shall be made to the specifications provided by the manufacturer.

1. SUPPLEMENT TO EC-TYPE-EXAMINATION CERTIFICATE PTB 03 ATEX 2214 X

Category-1/2 equipment

temperature class	temperature at the sensor	ambient temperature for the electronic system
T6	-20 ... +58 °C	-40 ... +47 °C
T5	-20 ... +60 °C	-40 ... +62 °C
T4, T3, T2, T1	-20 ... +60 °C	-40 ... +85 °C

For applications requiring category-1 equipment, the media process pressure has to be between 0.8 bar and 1.1 bar. The permissible ambient temperatures specified are based on the 80 % rule in section 6.4.2 of EN 1127-1.

When the ultrasonic sensor VEGASON type series SN6*.C***P/F*** or SN6*.C_**P/F*** are operated with higher temperatures than indicated in the table above, it shall be guaranteed by suitable measures, taking into account a temperature rise of the sensor of 6 K, that no ignition hazard is caused by such hot surfaces. In this case the temperature at the electronics housing shall not exceed the respective values of the table above.

For the process conditions without explosive mixtures, reference shall be made to the specifications provided by the manufacturer.

Category-2 equipment

temperature class	temperature at the sensor	ambient temperature for the electronic system
T6	-20 ... +74 °C	-40 ... +47 °C
T5	-20 ... +89 °C	-40 ... +62 °C
T4, T3, T2, T1	-20 ... +90 °C	-40 ... +85 °C

When the ultrasonic sensor VEGASON type series SN6*.C***P/F*** or SN6*.C_**P/F*** are operated with higher temperatures than indicated in the table above, it shall be guaranteed by suitable measures, taking into account a temperature rise of the sensor of 6 K, that no ignition hazard is caused by such hot surfaces. In this case the temperature at the electronics housing shall not exceed the respective values of the table above.

For the permissible operating temperatures and pressures, reference shall be made to the specifications provided by the manufacturer.

Electrical data

Supply and signal circuit
(terminals 1[+] & 2[-] in the electronics compartment, for the 2-cell enclosure version in the terminal compartment)

Category-1 resp. Category-1/2 equipment
Type of protection Intrinsic Safety EEx ia IIC/IIB
Category-2 equipment
Type of protection Intrinsic Safety EEx ia IIC/IIB
resp. EEx ib IIC/IIB
For connection to a certified intrinsically safe circuit.

1. SUPPLEMENT TO EC-TYPE-EXAMINATION CERTIFICATE PTB 03 ATEX 2214 X

Maximum values:

$$U_i = 17.5 \text{ V}$$

$$I_i = 500 \text{ mA}$$

$$P_i = 5.5 \text{ W}$$

C_i negligibly low

$$L_i \leq 5 \mu\text{H}$$

The equipment is suitable for the connection to a fieldbus system according to FISCO (IEC 60079-27), e.g. PROFIBUS-PA or Foundation Fieldbus.

or

$$U_i = 24 \text{ V}$$

$$I_i = 250 \text{ mA}$$

$$P_i = 1.2 \text{ W}$$

C_i negligibly low or in the version VEGASON type series SN6*.C***P/F3/4/5*** or SN6*.C_**P/F3/4/5***

$$C'_{i \text{ core/core}} = 58 \text{ pF/m}, C'_{i \text{ core/screen}} = 270 \text{ pF/m}$$

$$L_i \leq 5 \mu\text{H}, \text{ in the version VEGASON type series}$$

$$\text{SN6*.C***P/F3/4/5*** or SN6*.C_**P/F3/4/5***}$$

$$\text{additional } L'_i = 55 \mu\text{H/m}$$

Control and display circuit
(terminals No. 5,6,7,8 in the electronics compartment or plug connector for the 2-cell version)

type of protection Intrinsic Safety EEx ia IIC
For connection to the intrinsically safe supply and signal circuit of the external VEGADIS61 display unit (PTB 02 ATEX 2136 X).

The rules for interconnection of intrinsically safe circuits between the ultrasonic sensor VEGASON type series SN6*.C***P/F*** or SN6*.C_**P/F*** and the external VEGADIS61 display unit are complied with if the total inductance and capacitance of the connecting line between the ultrasonic sensor VEGASON type series SN6*.C***P/F*** or SN6*.C_**P/F*** and VEGADIS61 $L_{\text{cable}} = 100 \mu\text{H}$ and $C_{\text{cable}} = 2.8 \mu\text{F}$ is not exceeded.

A control and display module (A/B module or PLICSCOM) installed in the VEGASON type series SN6*.C***P/F*** or SN6*.C_**P/F*** and a connected VEGACONNECT3 have been considered.

Communication circuit
(I²C-bus socket in the electronics compartment, and additionally for the 2-cell housing version in the terminal compartment)

type of protection Intrinsic Safety EEx ia IIC
Only for connection to the intrinsically safe signal circuit of a VEGACONNECT3 interface converter (PTB 01 ATEX 2007).

Braunschweig und Berlin

1. SUPPLEMENT TO EC-TYPE-EXAMINATION CERTIFICATE PTB 03 ATEX 2214 X

Control and display module circuit (spring contacts in the electronics compartment, additionally for the 2-cell housing version in the terminal compartment.)

type of protection Intrinsic Safety EEx ia IIC
Only for connection to the VEGA control and display module (A/B module or PLICSCOM).
With the 2-cell housing version, the control and terminal display module may be housed either in the electronics compartment or the terminal compartment.

The metal elements of the ultrasonic sensors are electrically connected to the earth terminals.

The intrinsically safe supply and signal circuit is safely electrically isolated from elements that may be earthed.

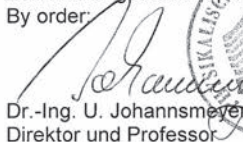
Special conditions for safe use

1. If used as a category-1 equipment, the ultrasonic sensor VEGASON type series SN6*.C***P/F*** or SN6*.C**P/F***, which include the material aluminium, shall be installed in such a way that sparking as a result of impact or friction between aluminium and steel (with the exception of stainless steel if the presence of rust particles can be excluded) is excluded.
2. The ultrasonic sensor with plastic enclosure and parts of enclosures out of plastic as well as the sensors include surfaces that can become charged electrostatically (note warning label).
3. In case of danger of mechanical damage of the sound transducer the ultrasonic sensors shall be installed in such a way that the sound transducer is protected against mechanical damage from the environment.

Test report: PTB Ex 05-25335

Zertifizierungsstelle Explosionsschutz

By order:


Dr.-Ing. U. Johannsmeyer
Direktor und Professor




Braunschweig, January 18, 2006

2. SUPPLEMENT

according to Directive 94/9/EC Annex III.6

to EC-TYPE-EXAMINATION CERTIFICATE PTB 03 ATEX 2214 X (Translation)

Equipment: Ultrasonic sensors type series VEGASON SN6*.C***P/F*** or SN6*.C_**P/F***

Marking:  II 1 G or II 1/2 G or II 2 G EEx ia IIC T6

Manufacturer: VEGA Grieshaber KG

Address: Am Hohenstein 113, 77761 Schiltach, Germany

Description of supplements and modifications

Applied standards

EN 60079-0:2006

EN 60079-11:2007

EN 60079-26:2007

The ultrasonic sensors type series VEGASON SN6*.C***P/F*** or SN6*.C_**P/F*** may also be manufactured and operated in accordance with the test results mentioned under section 3 of the test report.

The modifications concern the application of the above mentioned standards, the electrical data, the external and internal construction and the marking.

The marking is changed as follows:

 II 1 G oder II 1/2 G oder II 2 G Ex ia IIC T6

All other specifications remain valid without changes.

Electrical data

Supply and signal circuit
(terminals 1[+] & 2[-] in the electronics
compartment, for the 2-cell enclosure
version in the terminal compartment)

Category-1 resp. Category-1/2 equipment

Type of protection Intrinsic Safety Ex ia IIC/IIB

Category-2 equipment

Type of protection Intrinsic Safety Ex ia IIC/IIB

resp. Ex ib IIC/IIB

For connection to a certified intrinsically safe circuit.

Maximum values:

$$U_i = 17.5 \text{ V}$$

$$I_i = 500 \text{ mA}$$

$$P_i = 5.5 \text{ W}$$

C_i negligibly low

$$L_i \leq 5 \mu\text{H}$$

The equipment is suitable for the connection to a fieldbus system according to FISCO (IEC 60079-27), e.g. PROFIBUS-PA or Foundation Fieldbus.

or

$$U_i = 24 \text{ V}$$

$$I_i = 250 \text{ mA}$$

$$P_i = 1.2 \text{ W}$$

The effective internal capacitance C_i is negligibly low. In the version with permanent mounted connecting cable $C'_{i \text{ core/core}} = 58 \text{ pF/m}$ and $C'_{i \text{ core/screen}} = 270 \text{ pF/m}$ is to be taken into consideration.

The effective internal inductivity L_i is $\leq 5 \mu\text{H}$. In the version with permanent mounted connecting cable additional $L'_i = 55 \mu\text{H/m}$ is to be taken into consideration.

Control and display circuit
(terminals No. 5,6,7,8 in the electronics compartment or plug connector for the 2-cell version)

type of protection Intrinsic Safety Ex ia IIC
For connection to the intrinsically safe supply and signal circuit of the external VEGA display unit VEGADIS61 (PTB 02 ATEX 2136 X).

The rules for interconnection of intrinsically safe circuits between the ultrasonic sensor VEGASON type series SN6*.C*** and the external VEGADIS61 display unit are complied with if the total inductance and capacitance of the connecting line between the ultrasonic sensor VEGASON type series SN6*.C*** and VEGADIS61 $L_{\text{cable}} = 100 \mu\text{H}$ and $C_{\text{cable}} = 2.8 \mu\text{F}$ is not exceeded.

A control and display module (PLICSCOM) installed in the VEGASON type series SN6*.C*** and a connected VEGACONNECT have been considered. By using of the provided VEGA connecting cable between VEGASON type series SN6*.C*** and the external display unit VEGADIS61 the following cable inductance and cable capacitance are taken into consideration from a length $> 50 \text{ m}$:

1. SUPPLEMENT TO EC-TYPE-EXAMINATION CERTIFICATE PTB 03 ATEX 2214 X

$Li' = 0,62 \mu H/m$

$Ci'_{core/core} = 132 pF/m$

$Ci'_{core/screen} = 208 pF/m$

$Ci'_{screen/screen} = 192 pF/m$

Communication circuit
(I²C-bus socket in the electronics compartment, and additionally for the 2-cell housing version in the terminal compartment)

type of protection Intrinsic Safety Ex ia IIC
For connection to the intrinsically safe signal circuit of a VEGACONNECT interface converter (PTB 01 ATEX 2007, PTB 07 ATEX 2013 X).

Control and display module circuit
(spring contacts in the electronics compartment, additionally for the 2-cell housing version in the terminal compartment.)

type of protection Intrinsic Safety Ex ia IIC
For connection to the VEGA control and display module (PLICSCOM). With the 2-cell housing version, the control and terminal display module may be housed either in the electronics compartment or the terminal compartment.

The metal elements of the ultrasonic sensors are electrically connected to the earth terminals.

The intrinsically safe supply and signal circuit is safely electrically isolated from elements that may be earthed.

Test report: PTB Ex 08-28118

Zertifizierungsstelle Explosionsschutz
By order:


Dr.-Ing. U. Johannsmeyer
Direktor und Professor



Braunschweig, July 3, 2008



EC-TYPE-EXAMINATION CERTIFICATE

(Translation)

- (2) Equipment and Protective Systems Intended for Use in Potentially Explosive Atmospheres - **Directive 94/9/EC**
- (3) EC-type-examination Certificate Number:



PTB 03 ATEX 2213 X

- (4) Equipment: Ultrasonic sensor, type series VEGASON SN6*.C***H*** with integrated electronic assemblies SN61-63H
- (5) Manufacturer: VEGA Grieshaber KG
- (6) Address: Am Hohenstein 113, 77761 Schiltach, Germany
- (7) This equipment and any acceptable variation thereto are specified in the schedule to this certificate and the documents therein referred to.
- (8) The Physikalisch-Technische Bundesanstalt, notified body No. 0102 in accordance with Article 9 of the Council Directive 94/9/EC 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 confidential report PTB Ex 03-23417.
- (9) Compliance with the Essential Health and Safety Requirements has been assured by compliance with:
- EN 50014:1997 + A1 + A2 EN 50020:2002 EN 50284:1999
- (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 EC-type-examination Certificate relates only to the design, examination and tests of the specified equipment in accordance to the 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:

Ex II 1 G resp. II 1/2 G resp. II 2 G EEx ia IIC T6

Zertifizierungsstelle Explosionsschutz
By order:

Braunschweig, November 11, 2003

Dr.-Ing. U. Johannsmeyer
Regierungsdirektor



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EC-type-examination Certificates without signature and official stamp shall not be valid. The certificates may be circulated only without alteration. Extracts or alterations are subject to approval by the Physikalisch-Technische Bundesanstalt. In case of dispute, the German text shall prevail.

SCHEDULE

(13)

(14) EC-TYPE-EXAMINATION CERTIFICATE PTB 03 ATEX 2213 X

(15) Description of equipment

The ultrasonic sensor, type series VEGASON SN6*. C***H*** with integrated electronic assemblies SN61-63H, are used for level measurement in potentially explosive atmospheres requiring category-1 or category-1/2 or category-2 equipment. The enclosure may be optionally fitted with the control and display module "A/B module" or "PLICSCOM" for either parameterization or visualization.

The ultrasonic sensor consists of an electronics housing with the corresponding analyzing electronic system, the process connectors and the sensor.

Category-1 equipment

The ultrasonic sensors are installed in potentially explosive atmospheres requiring category-1 equipment.

Category-1/2 equipment

The electronics housing is installed in potentially explosive atmospheres requiring category-2 equipment. The process connectors are installed in the partition separating areas requiring category-2 or category-1 equipment. The sensor is installed in the potentially explosive atmosphere for category-1 equipment.

Category-2 equipment

The ultrasonic sensors are installed in potentially explosive atmospheres requiring category-2 equipment.

For the relationship between the temperature class and the maximum permissible temperature at the sensor and the maximum permissible ambient temperature for the electronic system, reference is made to the following table.

Category-1 equipment

temperature class	temperature at the sensor	ambient temperature for the electronic system
T6	-20 ... +41 °C	-20 ... +41 °C
T5	-20 ... +53 °C	-20 ... +53 °C
T4, T3, T2, T1	-20 ... +60 °C	-20 ... +60 °C

For applications requiring category-1 equipment, the media process pressure has to be between 0.8 bar and 1.1 bar. The permissible ambient temperatures specified are based on the 80% rule in section 6.4.2 of EN 1127-1. For the process conditions without explosive mixtures, reference shall be made to the specifications provided by the manufacturer.

sheet 2/5

Category-1/2 equipment

temperature class	temperature at the sensor	ambient temperature for the electronic system
T6	-20 ... +58 °C	-40 ... +57 °C
T5	-20 ... +60 °C	-40 ... +72 °C
T4, T3, T2, T1	-20 ... +60 °C	-40 ... +85 °C

For applications requiring category-1 equipment, the media process pressure has to be between 0.8 bar and 1.1 bar. The permissible ambient temperatures specified are based on the 80% rule in section 6.4.2 of EN 1127-1. For the process conditions without explosive mixtures, reference shall be made to the specifications provided by the manufacturer.

Category-2 equipment

temperature class	temperature at the sensor	ambient temperature for the electronic system
T6	-20 ... +74 °C	-40 ... +57 °C
T5	-20 ... +89 °C	-40 ... +72 °C
T4, T3, T2, T1	-20 ... +90 °C	-40 ... +85 °C

For the permissible operating temperatures and pressures, reference shall be made to the specifications provided by the manufacturer.

Electrical data

Supply and signal circuit
(terminals 1 {-}, 2 {-} in the compartment,
for the 2-cell enclosure
version in the terminal compartment)

Type of protection Intrinsic Safety EEx ia IIC
For connection to a certified intrinsically safe circuit.

Maximum values:

$U_i = 30 \text{ V}$

$I_i = 131 \text{ mA}$

$P_i = 983 \text{ mW}$

C_i negligibly low

L_i negligibly low

Control and display circuit
(terminals Nos. 5,6,7,8 in the electronics compartment or plug connector for the 2-cell enclosure version)

Type of protection Intrinsic Safety EEx ia IIC
For connection to the intrinsically safe supply and signal circuit of the corresponding external VEGA display unit VEGADIS61 (PTB 02 ATEX 2136 X).

The rules for interconnection of intrinsically safe circuits between the ultrasonic sensor, type series VEGASON and the external VEGADIS61 display unit are complied with if the total inductance and capacitance of the connecting line between ultrasonic sensor, type series VEGASON and the external VEGADIS61 display unit ($L_{\text{Kabel}} = 96 \mu\text{H}$ and $C_{\text{Kabel}} = 2.8 \mu\text{F}$) is not exceeded.

A control and display module (A/B module or PLICSCOM) installed in the ultrasonic sensor, type series VEGASON and a connected VEGACONNECT3 have been considered.

Communication circuit
(I²C-bus socket in the electronics compartment, for the 2-cell enclosure version in additionally the terminal compartment)

Type of protection Intrinsic Safety EEx ia IIC
For connection to the intrinsically safe signal circuit of a VEGA VEGACONNECT3 interface converter (PTB 01 ATEX 2007).

Control and display module circuit
(spring contacts in the electronics compartment, for the 2-cell enclosure version in additionally the terminal compartment)

Type of protection Intrinsic Safety EEx ia IIC
For connection to the VEGA control and display module (A/B module or PLICSCOM). With the 2-cell-enclosure version the operating and display module may either be fitted in the electronics compartment or in the terminal compartment.

The metal elements of the ultrasonic sensors are electrically connected to the earth terminals. The intrinsically safe circuits are safely electrically isolated from elements that may be earthed.

(16) Test report PTB Ex 03-23417

(17) Special conditions for safe use

1. If used as a category-1 equipment the ultrasonic sensor, type series VEGASON SN6*.C***H*** with integrated electronic assemblies SN61-63H, which include the material aluminium, shall be installed in such a way that sparking as a result of impact or friction between aluminium and steel (with the exception of stainless steel if the presence of rust particles can be excluded) is excluded.

2. The ultrasonic sensor with plastic enclosure and parts of enclosures out of plastic as well as the sensors include surfaces that can become charged electrostatically (note warning label).
3. In case of danger of mechanical damage of the sound transducer the ultrasonic sensors VEGASON shall be installed in such a way that the sound transducer is protected against mechanical damage from the environment.

(18) Essential health and safety requirements

met by compliance with the standards mentioned above

Zertifizierungsstelle Explosionsschutz

By order:

Braunschweig, November 11, 2003

Dr.-Ing. U. Johannsmeyer
Regierungsdirektor



1. SUPPLEMENT

according to Directive 94/9/EC Annex III.6

to EC-TYPE-EXAMINATION CERTIFICATE PTB 03 ATEX 2213 X

(Translation)

Equipment: Ultrasonic sensors type series VEGASON SN6*.C***H*** with integrated electronic assemblies SN61-63H

Marking:  II 1 G or II 1/2 G or II 2 G EEx ia IIC T6

Manufacturer: VEGA Grieshaber KG

Address: Am Hohenstein 113, 77761 Schiltach, Germany

Description of supplements and modifications

The name of the ultrasonic sensors type series VEGASON SN6*.C***H*** with integrated electronic assemblies SN61-63H is changed into ultrasonic sensor VEGASON type series SN6*.C***H*** or SN6*.C_**H***.

Other changes concern the internal and the external construction, the electrical data as well as the relationship between the temperature class and the maximum permissible temperature at the sensor and the maximum permissible ambient temperature for the electronic system and the "Special Conditions".

For the relationship between the temperature class and the maximum permissible temperature at the sensor and the maximum permissible ambient temperature for the electronic system, reference is made to the following table.

Category-1 equipment

temperature class	temperature at the sensor	ambient temperature for the electronic system
T6	-20 ... +41 °C	-20 ... +41 °C
T5	-20 ... +53 °C	-20 ... +53 °C
T4, T3, T2, T1	-20 ... +60 °C	-20 ... +60 °C

For applications requiring category-1 equipment, the media process pressure has to be between 0.8 bar and 1.1 bar. The permissible ambient temperatures specified are based on the 80 % rule in section 6.4.2 of EN 1127-1. For the process conditions without explosive mixtures, reference shall be made to the specifications provided by the manufacturer.

Category-1/2 equipment

temperature class	temperature at the sensor	ambient temperature for the electronic system
T6	-20 ... +58 °C	-40 ... +57 °C
T5	-20 ... +60 °C	-40 ... +72 °C
T4, T3, T2, T1	-20 ... +60 °C	-40 ... +85 °C

For applications requiring category-1 equipment, the media process pressure has to be between 0.8 bar and 1.1 bar. The permissible ambient temperatures specified are based on the 80 % rule in section 6.4.2 of EN 1127-1.

When the ultrasonic sensor VEGASON type series SN6*.C***H*** or SN6*.C_**H*** are operated with higher temperatures than indicated in the table above, it shall be guaranteed by suitable measures, taking into account a temperature rise of the sensor of 6 K, that no ignition hazard is caused by such hot surfaces. In this case the temperature at the electronics housing shall not exceed the respective values of the table above.

For the process conditions without explosive mixtures, reference shall be made to the specifications provided by the manufacturer.

Category-2 equipment

temperature class	temperature at the sensor	ambient temperature for the electronic system
T6	-20 ... +74 °C	-40 ... +57 °C
T5	-20 ... +89 °C	-40 ... +72 °C
T4, T3, T2, T1	-20 ... +90 °C	-40 ... +85 °C

When the ultrasonic sensor VEGASON type series SN6*.C***H*** or SN6*.C_**H*** are operated with higher temperatures than indicated in the table above, it shall be guaranteed by suitable measures, taking into account a temperature rise of the sensor of 6 K, that no ignition hazard is caused by such hot surfaces. In this case the temperature at the electronics housing shall not exceed the respective values of the table above.

For the permissible operating temperatures and pressures, reference shall be made to the specifications provided by the manufacturer.

Electrical data

Supply and signal circuit
(terminals 1[+] & 2[-] in the electronics compartment, for the 2-cell enclosure version in the terminal compartment)

Type of protection Intrinsic Safety EEx ia IIC
For connection to a certified intrinsically safe circuit.

Maximum values:

$U_i = 30 \text{ V}$

$I_i = 131 \text{ mA}$

$P_i = 983 \text{ mW}$

C_i negligibly low or in the version VEGASON type series SN6*.C***H3/4/5*** or SN6*.C_**H3/4/5***

$C'_{i \text{ core/core}} = 58 \text{ pF/m}$, $C'_{i \text{ core/screen}} = 270 \text{ pF/m}$

L_i negligibly low or in the version VEGASON type series SN6*.C***H3/4/5*** oder SN6*.C_**H3/4/5***

$L'_i = 55 \text{ }\mu\text{H/m}$

Control and display circuit
(terminals No. 5,6,7,8 in the electronics compartment or plug connector for the 2-cell version)

type of protection Intrinsic Safety EEx ia IIC
For connection to the intrinsically safe supply and signal circuit of the external VEGADIS61 display unit (PTB 02 ATEX 2136 X).

The rules for interconnection of intrinsically safe circuits between the ultrasonic sensor VEGASON type series SN6*.C***H*** or SN6*.C_**H*** and the external VEGADIS61 display unit are complied with if the total inductance and capacitance of the connecting line between the ultrasonic sensor VEGASON type series SN6*.C***H*** or SN6*.C_**H*** and VEGADIS61 $L_{\text{cable}} = 100 \text{ }\mu\text{H}$ and $C_{\text{cable}} = 2.8 \text{ }\mu\text{F}$ is not exceeded.

A control and display module (A/B module or PLICSCOM) installed in the VEGASON type series SN6*.C***H*** or SN6*.C_**H*** and a connected VEGACONNECT3 have been considered.

Communication circuit
(I²C-bus socket in the electronics compartment, and additionally for the 2-cell housing version in the terminal compartment)

type of protection Intrinsic Safety EEx ia IIC
Only for connection to the intrinsically safe signal circuit of a VEGACONNECT3 interface converter (PTB 01 ATEX 2007).

Control and display module circuit (spring contacts in the electronics compartment, additionally for the 2-cell housing version in the terminal compartment.)

type of protection Intrinsic Safety EEx ia IIC
Only for connection to the VEGA control and display module (A/B module or PLICSCOM).
With the 2-cell housing version, the control and terminal display module may be housed either in the electronics compartment or the terminal compartment.

The metal elements of the ultrasonic sensors are electrically connected to the earth terminals.

The intrinsically safe supply and signal circuit is safely electrically isolated from elements that may be earthed.

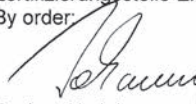
Special conditions for safe use

1. If used as a category-1 equipment, the ultrasonic sensor VEGASON type series SN6*.C***H*** or SN6*.C_**H***, which include the material aluminium, shall be installed in such a way that sparking as a result of impact or friction between aluminium and steel (with the exception of stainless steel if the presence of rust particles can be excluded) is excluded.
2. The ultrasonic sensor with plastic enclosure and parts of enclosures out of plastic as well as the sensors include surfaces that can become charged electrostatically (note warning label).
3. In case of danger of mechanical damage of the sound transducer the ultrasonic sensors shall be installed in such a way that the sound transducer is protected against mechanical damage from the environment.

Test report: PTB Ex 05-25334

Zertifizierungsstelle Explosionsschutz

By order:


Dr.-Ing. U. Johannsmeyer
Direktor und Professor



Braunschweig, January 18, 2006


2. SUPPLEMENT

according to Directive 94/9/EC Annex III.6

to EC-TYPE-EXAMINATION CERTIFICATE PTB 03 ATEX 2213 X

(Translation)

Equipment: Ultrasonic sensors VEGASON type series SN6*.C***H*** or SN6*.C_**H***

Marking:  II 1 G or II 1/2 G or II 2 G EEx ia IIC T6

Manufacturer: VEGA Grieshaber KG

Address: Am Hohenstein 113, 77761 Schiltach, Germany

Applied standards

EN 60079-0:2006


EN 60079-11:2007

EN 60079-26:2007

Description of supplements and modifications

The Ultrasonic sensors VEGASON type series SN6*.C***H*** or SN6*.C_**H*** are used for level measurement in potentially explosive atmospheres requiring category-1 or category-1/2 or category-2 equipment. They may be also installed and used according to the test documents mentioned in the test report.

The changes concern the application of the above mentioned standards, the external construction (stainless steel forming housing and a second pressure compensation element), the internal construction, the electrical data and the marking.

The marking changes as follows:  II 1 G or 1/2 G or II 2 G Ex ia IIC T6

Electrical data

Supply and signal circuit
(terminals 1[+] & 2[-] in the electronics compartment, for the 2-cell enclosure version in the terminal compartment)

Type of protection Intrinsic Safety Ex ia IIC
For connection to a certified intrinsically safe circuit.

Maximum values:

$U_i = 30 \text{ V}$

$I_i = 131 \text{ mA}$

$P_i = 983 \text{ mW}$

Sheet 1/2

EC-type-examination Certificates without signature and official stamp shall not be valid. The certificates may be circulated only without alteration. Extracts or alterations are subject to approval by the Physikalisch-Technische Bundesanstalt. In case of dispute, the German text shall prevail.

2. SUPPLEMENT TO EC-TYPE-EXAMINATION CERTIFICATE PTB 03 ATEX 2213 X

Control and display circuit (terminals No. 5,6,7,8 in the electronics compartment or plug connector for the 2-cell version)	C_i negligibly low or in the version VEGASON type series SN6*.C***H3/4/5/9*** or SN6*.C_**H3/4/5/9*** $C_{i' \text{ core/core}} = 58 \text{ pF/m}$, $C_{i' \text{ core/screen}} = 270 \text{ pF/m}$ L_i negligibly low or in the version VEGASON type series SN6*.C***H3/4/5/9*** oder SN6*.C_**H3/4/5/9*** $L_i' = 55 \text{ µH/m}$
Communication circuit (I ² C-bus socket in the electronics compartment, and additionally for the 2-cell housing version in the terminal compartment)	<p>type of protection Intrinsic Safety Ex ia IIC For connection to the intrinsically safe supply and signal circuit of the external VEGADIS61 display unit (PTB 02 ATEX 2136 X).</p> <p>The rules for interconnection of intrinsically safe circuits between the ultrasonic sensor VEGASON type series SN6*.C***H*** or SN6*.C_**H*** and the external VEGADIS61 display unit are complied with if the total inductance and capacitance of the connecting line between the ultrasonic sensor VEGASON type series SN6*.C***H*** or SN6*.C_**H*** and VEGADIS61 $L_{\text{cable}} = 100 \text{ µH}$ and $C_{\text{cable}} = 2.8 \text{ µF}$ is not exceeded.</p> <p>A control and display module (A/B module or PLICSCOM) installed in the VEGASON type series SN6*.C***H*** or SN6*.C_**H*** and a connected VEGACONNECT have been considered.</p> <p>type of protection Intrinsic Safety Ex ia IIC Only for connection to the intrinsically safe signal circuit of a VEGACONNECT interface converter (PTB 01 ATEX 2007, PTB 07 ATEX 2013 X).</p>
Control and display module circuit (spring contacts in the electronics compartment, additionally for the 2-cell housing version in the terminal compartment.)	<p>type of protection Intrinsic Safety Ex ia IIC Only for connection to the VEGA control and display module (A/B module or PLICSCOM). With the 2-cell housing version, the control and terminal display module may be housed either in the electronics compartment or the terminal compartment.</p>

The metal elements of the ultrasonic sensors are electrically connected to the earth terminals.

The intrinsically safe supply and signal circuit is safely electrically isolated from elements that may be earthed.

2. SUPPLEMENT TO EC-TYPE-EXAMINATION CERTIFICATE PTB 03 ATEX 2213 X

All other specifications remain without changes.

Test report: PTB Ex 08-27378

Zertifizierungsstelle Explosionsschutz

By order:

Braunschweig, February 22, 2008

Dr.-Ing. U. Johannsmeyer
Direktor und Professor



3rd SUPPLEMENT

according to Directive 94/9/EC Annex III.6

to EC-TYPE-EXAMINATION CERTIFICATE PTB 03 ATEX 2214 X

(Translation)

Equipment: Ultrasonic sensors type of VEGASON SN6*.C***P/F*** or SN6*.C_**P/F***

Marking:  II 1 G oder II 1/2 G or II 2 G Ex ia IIC T6

Manufacturer: VEGA Grieshaber KG

Address: Hohenstein 113
77761 Schiltach, Germany

Description of supplements and modifications

The ultrasonic sensors type series VEGASON SN6*.C***P/F***(*) or SN6*.C_**P/F***(*) may also be manufactured and operated in accordance with the test documentation mentioned under section 3.

The ultrasonic sensors type series VEGASON SN6*.C***P/F*** or SN6*.C_**P/F*** may also be marked with two additional not ex-relevant designators. The new type designation is VEGASON SN6*.C***P/F***(*) or SN6*.C_**P/F***(*)(*).

The marking is extended to the temperature classes T1-T5..

 II 1 G or II 1/2 G or II 2 G Ex ia IIC T6...T1 Ga, Ga/Gb, Gb

Further modifications concern the application of the above mentioned standards, the internal construction and the relationship between the temperature class and the maximum permissible temperature at the sensor and the maximum permissible ambient temperature for the electronic system.

All other specifications remain valid without changes.

For the relationship between the temperature class and the maximum permissible temperature at the sensor and the maximum permissible ambient temperature for the electronic system, reference is made to the following table.

Category-1 equipment, EPL Ga

temperature class	temperature at the sensor	ambient temperature for the electronic system
T4, T3, T2, T1	-20 ... +60 °C	-20 ... +60 °C

For applications requiring category-1 equipment, the media process pressure has to be between 0.8 bar and 1.1 bar. The permissible ambient temperatures specified are based on the 80% rule in section 6.4.2 of EN 1127-1. For the process conditions without explosive mixtures, reference shall be made to the specifications provided by the manufacturer.

Category-1/2 equipment, EPL Ga/Gb

temperature class	temperature at the sensor	ambient temperature for the electronic system
T6	-20 ... +58 °C	-40 ... +38 °C
T5	-20 ... +60 °C	-40 ... +53 °C
T4, T3, T2, T1	-20 ... +60 °C	-40 ... +85 °C

For applications requiring category-1 equipment, the media process pressure has to be between 0.8 bar and 1.1 bar. The permissible ambient temperatures specified are based on the 80 % rule in section 6.4.2 of EN 1127-1.

When the ultrasonic sensor VEGASON type series SN6*.C***P/F***(*) or SN6*.C_**P/F***(*) are operated with higher temperatures than indicated in the table above, it shall be guaranteed by suitable measures, taking into account a temperature rise of the sensor of 6 K, that no ignition hazard is caused by such hot surfaces. In this case the temperature at the electronics housing shall not exceed the respective values of the table above.

For the process conditions without explosive mixtures, reference shall be made to the specifications provided by the manufacturer.

Category-2 equipment, EPL Gb

temperature class	temperature at the sensor	ambient temperature for the electronic system
T6	-20 ... +74 °C	-40 ... +38 °C
T5	-20 ... +89 °C	-40 ... +53 °C
T4, T3, T2, T1	-20 ... +90 °C	-40 ... +85 °C

When the ultrasonic sensor VEGASON type series SN6*.C***P/F***(*) or SN6*.C_**P/F***(*) are operated with higher temperatures than indicated in the table above, it shall be guaranteed by suitable measures, taking into account a temperature rise of the sensor of 6 K, that no ignition hazard is caused by such hot surfaces. In this case the temperature at the electronics housing shall not exceed the respective values of the table above.

For the permissible operating temperatures and pressures, reference shall be made to the specifications provided by the manufacturer.

Electrical data

Supply and signal circuit

(terminals 1[+] & 2[-] in the electronics compartment, for the 2-cell enclosure version in the terminal compartment)

Category-1 resp. Category-1/2 equipment

Type of protection Intrinsic Safety Ex ia IIC/IIB

Category-2 equipment

Type of protection Intrinsic Safety Ex ia IIC/IIB
resp. Ex ib IIC/IIB

For connection to a certified intrinsically safe circuit.

Maximum values:

$$U_i = 17.5 \text{ V}$$

$$I_i = 500 \text{ mA}$$

$$P_i = 5.5 \text{ W}$$

C_i negligibly low

$$L_i \leq 5 \mu\text{H}$$

The equipment is suitable for the connection to a fieldbus system according to FISCO (EN 60079-27), e.g. PROFIBUS-PA or Foundation Fieldbus.

or

$$U_i = 24 \text{ V}$$

$$I_i = 250 \text{ mA}$$

$$P_i = 1.2 \text{ W}$$

The effective internal capacitance C_i is negligibly low. In the version with permanent mounted connecting cable $C'_{i \text{ core/core}} = 150 \text{ pF/m}$ and $C'_{i \text{ core/screen}} = 270 \text{ pF/m}$ is to be taken into consideration.

The effective internal inductivity L_i is $\leq 5 \mu\text{H}$. In the version with permanent mounted connecting cable additional $L'_i = 0.55 \mu\text{H/m}$ is to be taken into consideration.

Control and display circuit

(terminals No. 5,6,7,8 in the electronics compartment or plug connector for the 2-cell version)

Type of protection Intrinsic Safety Ex ia IIC

For connection to the intrinsically safe supply and signal circuit of the external VEGA display unit VEGADIS61/81 (PTB 02 ATEX 2136 X).

The rules for interconnection of intrinsically safe circuits between the ultrasonic sensor VEGASON type series SN6*.C*** and the external VEGADIS61/81 display unit are complied with if the total inductance and capacitance of the connecting line between the ultrasonic sensor VEGASON type series SN6*.C*** and VEGADIS61/81 $L_{\text{cable}} = 100 \mu\text{H}$ and $C_{\text{cable}} = 2.8 \mu\text{F}$ is not exceeded. A control and display module (PLICSCOM or PLICSCOM2) installed in the VEGASON type series SN6*.C*** and a connected VEGACONNECT have been considered. By using of the provided VEGA connecting cable between VEGASON type series SN6*.C*** and the external display unit VEGADIS61/81 the following cable inductance and cable capacitance are taken into consideration from a length $\geq 50 \text{ m}$:

$$L'_i = 0,62 \mu\text{H/m}$$

$$C'_{i \text{ core/core}} = 132 \text{ pF/m}$$

$$C'_{i \text{ core/screen}} = 208 \text{ pF/m}$$

$$C'_{i \text{ screen/screen}} = 192 \text{ pF/m}$$

Communication circuit
(I²C-bus socket in the electronics compartment, and additionally for the 2-cell housing version in the terminal compartment)

Type of protection Intrinsic Safety Ex ia IIC
For connection to the intrinsically safe signal circuit of a VEGACONNECT interface converter
(PTB 01 ATEX 2007, PTB 07 ATEX 2013 X).

Control and display module circuit
(spring contacts in the electronics compartment, additionally for the 2-cell housing version in the terminal compartment.)

Type of protection Intrinsic Safety Ex ia IIC
For connection to the VEGA control and display module (PLICSCOM or PLICSCOM2). With the 2-cell housing version, the control and terminal display module may be housed either in the electronics compartment or the terminal compartment.

The metal elements of the ultrasonic sensors are electrically connected to the earth terminals.

The intrinsically safe supply and signal circuit is safely electrically isolated from elements that may be earthed.

Applied standards

EN 60079-0:2012

EN 60079-11:2012

EN 60079-26:2007

Test report: PTB Ex 13-23094

Zertifizierungssektor Explosionsschutz
On behalf of PTB:

Braunschweig, August 7, 2013


Dr.-Ing. U. Johannsmeyer
Direktor und Professor



