Physikalisch-Technische Bundesanstalt

Braunschweig und Berlin

(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 2163 X

(4) Equipment: Microwave sensor, type series VEGAPULS PS6*.DX***H/V***
with integrated electronic assemblies PS60HC resp.PS60HK

(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 03-23256.

(9) Compliance with the Essential Health and Safety Requirements has been assured by compliance with:

EN 50014:1997 + A1 + A2 **EN 50018:2000** **EN 50284:1999**
EN 50020:2002

(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:

II 1/2 G or II 2G **EEx d ia IIC T6**

Zertifizierungsstelle Explosionsschutz
By order:

Dr.-Ing. U. Johannsmeyer
Regierungsdirektor

Braunschweig, August 28, 2003

(13) # SCHEDULE

(14) ## EC-TYPE-EXAMINATION CERTIFICATE PTB 03 ATEX 2163 X

(15) Description of equipment

The microwave sensor, type series VEGAPULS PS6*.DX***H/V*** with integrated electronic assemblies PS60HC resp. PS60HK, are used for level measurement in potentially explosive atmospheres requiring 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 pressure transducers consist of an electronics housing with the corresponding analyzing electronic system, the process connectors and the sensor.

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 microwave 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.

VEGAPULS PS6*.DX*H*****

Category-1/2 equipment

temperature class	temperature at the sensor	ambient temperature for the electronic system
T6	-20 ... +60 °C	-40 ... +55 °C
T5, T4, T3, T2, T1	-20 ... +60 °C	-40 ... +70 °C

For applications requiring category-1/2 equipment, the media process pressure has to be between 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.

Category-2 equipment

temperature class	temperature at the sensor	ambient temperature for the electronic system
T6	-50 ... +85 °C	-40 ... +55 °C
T5	-50 ... +100 °C	-40 ... +70 °C
T4	-50 ... +135 °C	-40 ... +70 °C
T3	-50 ... +200 °C	-40 ... +70 °C
T2	-50 ... +300 °C	-40 ... +70 °C
T1	-50 ... +400 °C	-40 ... +70 °C

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

VEGAPULS PS6*.DX*V*****

Category-1/2 equipment

temperature class	temperature at the sensor	ambient temperature for the electronic system
T6	-20 ... +60 °C	-40 ... +55 °C
T5, T4, T3, T2, T1	-20 ... +60 °C	-40 ... +64 °C

For applications requiring category-1/2 equipment, the media process pressure has to be between 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

Category-2 equipment

temperature class	temperature at the sensor	ambient temperature for the electronic system
T6	-50 ... +85 °C	-40 ... +55 °C
T5	-50 ... +100 °C	-40 ... +64 °C
T4	-50 ... +135 °C	-40 ... +64 °C
T3	-50 ... +200 °C	-40 ... +64 °C
T2	-50 ... +300 °C	-40 ... +64 °C
T1	-50 ... +400 °C	-40 ... +64 °C

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

Electrical data

Supply circuit (terminals Kl1, Kl2 in the "d"-terminal compartment)	**VEGAPULS PS6*.DX***H*** U = 20 V ... 36 V DC U_m= 253 V AC **VEGAPULS PS6*.DX***V*** U = 20 V ... 253 V AC U_m= 253 V AC
Supply circuit (terminals Kl1(1+), Kl1(2-) in the "d"-terminal compartment)	
Signal-circuit (terminals KL2 (3+) KL2(4-) in the "d"-terminal compartment)	4 ... 20 mA with superimposed HART Signal U_m = 253 V AC
Control and display circuit (terminals Nos. 5,6,7,8 or plug connector in the electronics compartment)	**VEGAPULS PS6*.DX***H/V*** 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 microwave sensors, type series VEGAPULS and the external VEGADIS61 display unit are complied with if the total inductance and capacitance of the connecting line between microwave sensors, type series VEGAPULS and the external VEGADIS61 display unit (L_{Kabel} = 96 µH and C_{Kabel} = 2.8 µF) is not exceeded. A control and display module (A/B module or PLICSCOM) installed in the microwave sensors, type series VEGAPULS and a connected VEGACONNECT3 have been considered.
Communication circuit (I^2C-bus socket in the electronics compartment)	Type of protection Intrinsic Safety EEx ia IIC For connection to the intrinsically safe signal circuit of a VEGA interface converter VEGACONNECT3 (PTB 01 ATEX 2007).
Control and display module circuit (spring contacts in the electronics compartment)	Type of protection Intrinsic Safety EEx ia IIC For connection to the VEGA control and display module (A/B module or PLICSCOM)

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

Physikalisch-Technische Bundesanstalt

Braunschweig und Berlin

SCHEDULE TO EC-TYPE-EXAMINATION CERTIFICATE PTB 03 ATEX 2163 X

(16) Test report PTB Ex 03-23256

(17) Special conditions for safe use

1. The microwave sensor, type series VEGAPULS PS6*.DX***H/V*** with integrated electronic assemblies PS60HC resp. PS60HK, 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 microwave sensors with parts of enclosures out of plastic and also the sensors include surfaces that can become charged electrostatically (note warning label).
3. The microwave sensors shall be installed in such a way that impact of the sensor to the tank wall can be excluded with sufficient safety considering the tank installations and the flow conditions inside the tank. This applies, in particular, to sensors which are more than 3 m long.
4. The flameproof terminal compartment with integrated "Barriere P2-2/4LH"-electronic system shall be connected by means of suitable cable entries and conduit systems, which meet the requirements of in EN 50018, sections 13.1 and 13.2, and for which a separate examination certificate has been issued.
5. Cable entries (conduit threads) and sealing plugs of simple designs must not be used. Should the flameproof terminal compartment with integrated "Barriere P2-2/4LH"-electronic system be connected by means of a conduit entry which has been approved for this purpose, the required sealing device shall be provided directly at the housing.
6. Non-used openings shall be sealed according to EN 50018, section 11.9.
7. The connecting line of the flameproof terminal compartment with integrated "Barriere P2-2/4LH"-electronic system shall be installed to provide for permanent wiring and sufficient protection against mechanical damage.

(18) Essential health and safety requirements

Met by compliance with the standards mentioned above.

Zertifizierungsstelle Explosionsschutz
By order:

Dr.-Ing. U. Johannsmeyer
Regierungsdirektor

Braunschweig, August 28, 2003

Physikalisch-Technische Bundesanstalt

Braunschweig und Berlin

1. SUPPLEMENT

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

to EC-TYPE-EXAMINATION CERTIFICATE PTB 03 ATEX 2163 X

(Translation)

Equipment: Microwave sensors type series VEGAPULS PS6*.DX***H/V***
with integrated electronic assemblies PS60HC resp.PS60HK

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

Manufacturer: VEGA Grieshaber KG

Address: Am Hohenstein 113, 77761 Schiltach, Germany

Description of supplements and modifications

The type designation of the microwave sensors type series VEGAPULS PS6*.DX***H/V*** with integrated electronic assembly PS60HC resp. PS60HK is changed to VEGAPULS PS6*.D_***H/V*** with integrated electronic assembly PS60HC resp. PS60HK.

The microwave sensor type series VEGAPULS PS6*.D_***H/V*** with integrated electronic assembly PS60HC resp. PS60HK and barriers P2-2LH resp. P2-4LH are extended with the galvanically separated barrier KLEMP2-2LHD. The key code for this version with the galvanically separating barrier KLEMP2-2LHD is VEGAPULS PS6*.D_***H***.

In the version with the electronic assembly PS60PAC, PS60PAK resp. PS60FFC, PS60FFK and the galvanically separating barrier KLEMP2-2LPAD is the key code VEGAPULS PS6*.D_***P/F***.

The microwave sensor type series VEGAPULS PS6*.D_***H/P/F/V*** may also be manufactured and operated in the mechanical design with parabolic antenna.

Other changes concern the internal as well as the external construction. They are described in item 3 of the test report . All other specifications remain valid without changes.

The microwave sensors type series VEGAPULS PS6* ... are used for level measurement in potentially explosive atmospheres requiring 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 microwave sensors consist of an electronics housing with the corresponding analyzing electronic system, the process connectors and the sensor.

1. SUPPLEMENT TO EC-TYPE-EXAMINATION CERTIFICATE PTB 03 ATEX 2163 X

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

VEGAPULS PS6*.D ***H* with barrier P2-2LH**

Category-1/2 equipment

temperature class	temperature at the sensor	ambient temperature for the electronic system
T6	-20 ... +60 °C	-40 ... +55 °C
T5, T4, T3, T2, T1	-20 ... +60 °C	-40 ... +70 °C

If the sensors of the VEGAPULS PS6*.D_***H*** are operated with higher temperatures than indicated in the table above, it shall be guaranteed by suitable measures that no ignition hazard is caused by such hot surfaces. In this case the maximum permissible temperature at the electronics / the housing shall not exceed the respective values of the table above.

For applications requiring category-1/2 equipment, the media process pressure has to be between 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.

Category-2 equipment

temperature class	temperature at the sensor	ambient temperature for the electronic system
T6	-50 ... + 85 °C	-40 ... +55 °C
T5	-50 ... +100 °C	-40 ... +70 °C
T4	-50 ... +130 °C	-40 ... +70 °C
T3	-50 ... +200 °C	-40 ... +70 °C
T2	-50 ... +300 °C	-40 ... +70 °C
T1	-50 ... +400 °C	-40 ... +70 °C

1. SUPPLEMENT TO EC-TYPE-EXAMINATION CERTIFICATE PTB 03 ATEX 2163 X

If the sensors of the VEGAPULS PS6*.D_***H*** are operated with higher temperatures than indicated in the table above, it shall be guaranteed by suitable measures that no ignition hazard is caused by such hot surfaces. In this case the maximum permissible temperature at the electronics / the 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.

VEGAPULS PS6*.D ***V* with barrier P2-4LH**

Category-1/2 equipment

temperature class	temperature at the sensor	ambient temperature for the electronic system
T6	-20 ... +60 °C	-40 ... +55 °C
T5, T4, T3, T2, T1	-20 ... +60 °C	-40 ... +64 °C

If the sensors of the VEGAPULS PS6*.D_***V*** are operated with higher temperatures than indicated in the table above, it shall be guaranteed by suitable measures that no ignition hazard is caused by such hot surfaces. In this case the maximum permissible temperature at the electronics / the housing shall not exceed the respective values of the table above.

For applications requiring category-1/2 equipment, the media process pressure has to be between 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.

Category-2 equipment

temperature class	temperature at the sensor	ambient temperature for the electronic system
T6	-50 ... + 85 °C	-40 ... +55 °C
T5	-50 ... +100 °C	-40 ... +64 °C
T4	-50 ... +135 °C	-40 ... +64 °C
T3	-50 ... +200 °C	-40 ... +64 °C
T2	-50 ... +300 °C	-40 ... +64 °C
T1	-50 ... +400 °C	-40 ... +64 °C

If the sensors of the VEGAPULS PS6*.D_***V*** are operated with higher temperatures than indicated in the table above, it shall be guaranteed by suitable measures that no ignition hazard is caused by such hot surfaces. In this case the maximum permissible temperature at the electronics / the 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.

1. SUPPLEMENT TO EC-TYPE-EXAMINATION CERTIFICATE PTB 03 ATEX 2163 X

VEGAPULS PS6*.D ***H* with barrier KLEMP2-2LHD**

Category-1/2 equipment

temperature class	temperature at the sensor	ambient temperature for the electronic system
T6	-20 ... +60 °C	-40 ... +55 °C
T5, T4, T3, T2, T1	-20 ... +60 °C	-40 ... +68 °C

If the sensors of the VEGAPULS PS6*.D_***H*** are operated with higher temperatures than indicated in the table above, it shall be guaranteed by suitable measures that no ignition hazard is caused by such hot surfaces. In this case the maximum permissible temperature at the electronics / the housing shall not exceed the respective values of the table above.

For applications requiring category-1/2 equipment, the media process pressure has to be between 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.

Category-2 equipment

temperature class	temperature at the sensor	ambient temperature for the electronic system
T6	-40 ... + 85 °C	-40 ... +55 °C
T5	-40 ... +100 °C	-40 ... +68 °C
T4	-40 ... +135 °C	-40 ... +68 °C
T3	-50 ... +200 °C	-40 ... +68 °C
T2	-50 ... +300 °C	-40 ... +68 °C
T1	-50 ... +400 °C	-40 ... +68 °C

If the sensors of the VEGAPULS PS6*.D_***H*** are operated with higher temperatures than indicated in the table above, it shall be guaranteed by suitable measures that no ignition hazard is caused by such hot surfaces. In this case the maximum permissible temperature at the electronics / the 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.

1. SUPPLEMENT TO EC-TYPE-EXAMINATION CERTIFICATE PTB 03 ATEX 2163 X

VEGAPULS PS6*.D_*P/F***** with barrier KLEMP2-2LPAD

Category-1/2 equipment

temperature class	temperature at the sensor	ambient temperature for the electronic system
T6	-20 ... +60 °C	-40 ... +47°C
T5	-20 ... +60 °C	-40 ... +62 °C
T4, T3, T2, T1	-20 ... +60 °C	-40 ... +74 °C

If the sensors of the VEGAPULS PS6*.D_***P/F*** are operated with higher temperatures than indicated in the table above, it shall be guaranteed by suitable measures that no ignition hazard is caused by such hot surfaces. In this case the maximum permissible temperature at the electronics / the housing shall not exceed the respective values of the table above.

For applications requiring category-1/2 equipment, the media process pressure has to be between 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

Category-2 equipment

temperature class	temperature at the sensor	ambient temperature for the electronic system
T6	-50 ... + 85 °C	-40 ... +47 °C
T5	-50 ... +100 °C	-40 ... +62 °C
T4	-50 ... +135 °C	-40 ... +74 °C
T3,	-50 ... +200 °C	-40 ... +74 °C
T2,	-40 ... +300 °C	-40 ... +74 °C
T1	-50 ... +400 °C	-40 ... +74 °C

If the sensors of the VEGAPULS PS6*.D_***P/F*** are operated with higher temperatures than indicated in the table above, it shall be guaranteed by suitable measures that no ignition hazard is caused by such hot surfaces. In this case the maximum permissible temperature at the electronics / the 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.

Physikalisch-Technische Bundesanstalt

Braunschweig und Berlin

1. SUPPLEMENT TO EC-TYPE-EXAMINATION CERTIFICATE PTB 03 ATEX 2163 X

Electrical data

	VEGAPULS PS6*.D_*H*** VEGAPULS PS6*.D_***P/F***,**
Supply circuit (terminals KI1 [+], KI2 [-] in the "d"-terminal compartment)	U = 20 V ... 36 V DC U_m = 253 V AC
	VEGAPULS PS6*.D_*V***
Supply circuit (terminals KI1 [+], KI2 [-] in the "d"-terminal compartment)	U = 20 V ... 253 V AC U_m = 253 V AC
Signal-circuit (terminals KL4 [+] KL5 [-] in the "d"-terminal compartment)	I = 4 ... 20 mA with superimposed HART Signal U_m = 253 V AC
	VEGAPULS PS6*.D_*H/V*** VEGAPULS PS6*.D_***P/F***,**
Control and display circuit (terminals Nos. 5,6,7,8 in the electronics compartment)	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 level measuring instruments, type series VEGAPULS PS6*.D_***H/P/F/VD*** and the external VEGADIS61 display unit are complied with if the total inductance and capacitance of the connecting line between level measuring instruments, type series VEGAPULS 6* ... and the external VEGADIS61 display unit (L_{cable} = 96 µH and C_{cable} = 2.8 µF) is not exceeded.

A control and display module (A/B module or PLICSCOM) installed in the level measuring instruments, type series VEGAPULS and a connected VEGACONNECT3 have been considered.

Communication circuit (I^2C-bus socket in the electronics compartment)	Type of protection Intrinsic Safety EEx ia IIC For connection to the intrinsically safe signal circuit of a VEGA interface converter VEGACONNECT3 (PTB 01 ATEX 2007).
Control and display module circuit (spring contacts in the electronics compartment)	Type of protection Intrinsic Safety EEx ia IIC For connection to the VEGA control and display module (A/B module or PLICSCOM)

Physikalisch-Technische Bundesanstalt

Braunschweig und Berlin

1. SUPPLEMENT TO EC-TYPE-EXAMINATION CERTIFICATE PTB 03 ATEX 2163 X

The metal elements of the microwave sensor type series **VEGAPULS PS6*.D_***H/V***** are electrically connected to the earth terminals.

For the microwave sensor type series **VEGAPULS PS6*.D_***P/F***** **with the barrier KLEMP2-2LPAD** the intrinsically safe signal circuit is galvanically isolated from the supply circuit up to a peak value of the nominal voltage of 375 V.

For the microwave sensor type series **VEGAPULS PS6*.D_***H***** **with the barrier KLEMP2-2LHD** the intrinsically safe signal circuit is galvanically isolated from the supply circuit up to a peak value of the nominal voltage of 375 V.

Special conditions for safe use

1. The microwave sensor, type series VEGAPULS PS6* ... with integrated electronic assemblies PS60HS, 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 microwave sensors with parts of enclosures out of plastic and also the sensors include surfaces that can become charged electrostatically (note warning label).
3. The microwave sensors shall be installed in such a way that impact of the sensor to the tank wall can be excluded with sufficient safety considering the tank installations and the flow conditions inside the tank. This applies, in particular, to sensors which are more than 3 m long.
4. The flameproof terminal compartment with integrated electronics shall be connected by means of suitable cable entries and conduit systems, which meet the requirements of in EN 50018, sections 13.1 and 13.2, and for which a separate examination certificate has been issued.
5. Cable entries (conduit threads) and sealing plugs of simple designs shall not be used. Should the flameproof terminal compartment with integrated electronic be connected by means of a conduit entry which has been approved for this purpose, the required sealing device shall be provided directly at the housing.
6. Non-used openings shall be sealed according to EN 50018, section 11.9.
7. The connecting line of the flameproof terminal compartment with integrated electronics shall be installed to provide for permanent wiring and sufficient protection against mechanical damage.

Test report: PTB Ex 05-25131

Zertifizierungsstelle Explosionsschutz
By order:

Dr.-Ing. U. Johannsmeyer
Direktor und Professor

Braunschweig, July 11, 2005

Physikalisch-Technische Bundesanstalt

Braunschweig und Berlin

2. SUPPLEMENT

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

to EC-TYPE-EXAMINATION CERTIFICATE PTB 03 ATEX 2163 X

(Translation)

Equipment: Microwave sensors type series VEGAPULS PS6*.D_***H/P/F/V*** with integrated electronic assembly PS60HC, PS60HK, PS60PAC, PS60PAK, PS60FFC or PS60FFK PS6*.DX***H/V***

Marking: ⟨Ex⟩ **II 1/2 G or II 2G EEx d ia IIC T6**

Manufacturer: VEGA Grieshaber KG

Address: Am Hohenstein 113, 77761 Schiltach, Germany

Description of supplements and modifications

The name of the microwave sensors type series VEGAPULS PS6*.D_***H/P/F/V*** with integrated electronic assemblies PS60HC, PS60HK, PS60PAC, PS60PAK, PS60FFC or PS60FFK is changed into radar sensors VEGAPULS type series VEGAPULS PS6*.DX/D_***H/P/F/V***. Furthermore the type series VEGAPULS are extended for the type series PS61/62/63.DX/D_***D/E***. In the radar sensors VEGAPULS type series PS61/62/63.DX/D_***D*** the electronic assembly PS60HS is used in the 2-wire version and in the type series PS61/62/63.DX/D_***E*** in the 4-wire version is used.

Other changes concern the internal and the external construction, the electrical data, 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.

VEGAPULS PS6*.DX/D ***H* with barrier P2-2LH**

Category-1/2 equipment

temperature class	temperature at the sensor	ambient temperature for the electronic system
T6	-20 ... +60 °C	-40 ... +55 °C
T5, T4, T3, T2, T1	-20 ... +60 °C	-40 ... +70 °C

For applications requiring category-1/2 equipment, the media process pressure has to be between 0.8 bar and 1.1 bar.

If the sensors of the VEGAPULS PS6*.DX/D_***H*** are operated with higher temperatures than indicated in the table above, it shall be guaranteed by suitable measures 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	-60 ... + 85 °C	-40 ... +55 °C
T5	-60 ... +100 °C	-40 ... +70 °C
T4	-60 ... +130 °C	-40 ... +70 °C
T3	-60 ... +200 °C	-40 ... +70 °C
T2	-60 ... +300 °C	-40 ... +70 °C
T1	-60 ... +400 °C	-40 ... +70 °C

If the sensors of the VEGAPULS PS6*.DX/D_***H*** are operated with higher temperatures than indicated in the table above, it shall be guaranteed by suitable measures 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.

VEGAPULS PS61/62/63.DX/D ***D* with barrier P2-2LH**

Category-1/2 equipment

temperature class	temperature at the sensor	ambient temperature for the electronic system
T5	-20 ... +60 °C	-40 ... +45 °C
T4, T3, T2, T1	-20 ... +60 °C	-40 ... +68 °C

For applications requiring category-1/2 equipment, the media process pressure has to be between 0.8 bar and 1.1 bar.

If the sensors of the VEGAPULS PS61/62/63.DX/D_***D*** are operated with higher temperatures than indicated in the table above, it shall be guaranteed by suitable measures 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
T5	-60 ... +100 °C	-40 ... +45 °C
T4*	-60 ... +135 °C	-40 ... +68 °C
T3, T2, T1*	-60 ... +200 °C	-40 ... +68 °C

*from 130 °C with temperature distance piece

If the sensors of the VEGAPULS PS61/62/63.DX/D_***D*** are operated with higher temperatures than indicated in the table above, it shall be guaranteed by suitable measures 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.

VEGAPULS PS6*.DX/D ***V* with barrier P2-4LH**

Category-1/2 equipment

temperature class	temperature at the sensor	ambient temperature for the electronic system
T6	-20 ... +60 °C	-40 ... +55 °C
T5, T4, T3, T2, T1	-20 ... +60 °C	-40 ... +64 °C

For applications requiring category-1/2 equipment, the media process pressure has to be between 0.8 bar and 1.1 bar.

If the sensors of the VEGAPULS PS6*.DX/D_***V*** are operated with higher temperatures than indicated in the table above, it shall be guaranteed by suitable measures 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	-60 ... + 85 °C	-40 ... +55 °C
T5	-60 ... +100 °C	-40 ... +64 °C
T4	-60 ... +135 °C	-40 ... +64 °C
T3	-60 ... +200 °C	-40 ... +64 °C
T2	-60 ... +300 °C	-40 ... +64 °C
T1	-60 ... +400 °C	-40 ... +64 °C

If the sensors of the VEGAPULS PS6*.DX/D_***V*** are operated with higher temperatures than indicated in the table above, it shall be guaranteed by suitable measures 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.

VEGAPULS PS61/62/63.DX/D ***E* with barrier P2-4LH**

Category-1/2 equipment

temperature class	temperature at the sensor	ambient temperature for the electronic system
T5	-20 ... +60 °C	-40 ... +45 °C
T4, T3, T2, T1	-20 ... +60 °C	-40 ... +64 °C

For applications requiring category-1/2 equipment, the media process pressure has to be between 0.8 bar and 1.1 bar.

If the sensors of the VEGAPULS PS61/62/63.DX/D_***E*** are operated with higher temperatures than indicated in the table above, it shall be guaranteed by suitable measures 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
T5	-60 ... +100 °C	-40 ... +45 °C
T4*	-60 ... +135 °C	-40 ... +64 °C
T3, T2, T1*	-60 ... +200 °C	-40 ... +64 °C

*from 130 °C with temperature distance piece

If the sensors of the VEGAPULS PS61/62/63.DX/D_***E*** are operated with higher temperatures than indicated in the table above, it shall be guaranteed by suitable measures 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.

VEGAPULS PS6*.DX/D ***H* with barrier KLEMP2-2LHD**

Category-1/2 equipment

temperature class	temperature at the sensor	ambient temperature for the electronic system
T6	-20 ... +60 °C	-40 ... +55 °C
T5, T4, T3, T2, T1	-20 ... +60 °C	-40 ... +68 °C

For applications requiring category-1/2 equipment, the media process pressure has to be between 0.8 bar and 1.1 bar.

If the sensors of the VEGAPULS PS6*.DX/D_***H*** are operated with higher temperatures than indicated in the table above, it shall be guaranteed by suitable measures 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	-40 ... + 85 °C	-40 ... +55 °C
T5	-40 ... +100 °C	-40 ... +68 °C
T4	-40 ... +135 °C	-40 ... +68 °C
T3	-60 ... +200 °C	-40 ... +68 °C
T2	-60 ... +300 °C	-40 ... +68 °C
T1	-60 ... +400 °C	-40 ... +68 °C

If the sensors of the VEGAPULS PS6*.DX/D_***H*** are operated with higher temperatures than indicated in the table above, it shall be guaranteed by suitable measures 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.

VEGAPULS PS61/62/63.DX/D ***D* with barrier KLEMP2-2LHD**

Category-1/2 equipment

temperature class	temperature at the sensor	ambient temperature for the electronic system
T5	-20 ... +60 °C	-40 ... +45 °C
T4, T3, T2, T1	-20 ... +60 °C	-40 ... +68 °C

For applications requiring category-1/2 equipment, the media process pressure has to be between 0.8 bar and 1.1 bar.

If the sensors of the VEGAPULS PS61/62/63.DX/D_***D*** are operated with higher temperatures than indicated in the table above, it shall be guaranteed by suitable measures 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
T5	-60 ... +100 °C	-40 ... +45 °C
T4*	-60 ... +135 °C	-40 ... +68 °C
T3, T2, T1*	-60 ... +200 °C	-40 ... +68 °C

*from 130 °C with temperature distance piece

If the sensors of the VEGAPULS PS61/62/63.DX/D_***E*** are operated with higher temperatures than indicated in the table above, it shall be guaranteed by suitable measures 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.

VEGAPULS PS6*.DX/D ***P/F* with barrier KLEMP2-2LPAD**

Category-1/2 equipment

temperature class	temperature at the sensor	ambient temperature for the electronic system
T6	-20 ... +60 °C	-40 ... +47°C
T5	-20 ... +60 °C	-40 ... +62 °C
T4, T3, T2, T1	-20 ... +60 °C	-40 ... +74 °C

For applications requiring category-1/2 equipment, the media process pressure has to be between 0.8 bar and 1.1 bar.

If the sensors of the VEGAPULS PS6*.DX/D_***P/F*** are operated with higher temperatures than indicated in the table above, it shall be guaranteed by suitable measures 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	-60 ... + 85 °C	-40 ... +47 °C
T5	-60 ... +100 °C	-40 ... +62 °C
T4	-60 ... +135 °C	-40 ... +74 °C
T3,	-60 ... +200 °C	-40 ... +74 °C
T2,	-40 ... +300 °C	-40 ... +74 °C
T1	-60 ... +400 °C	-40 ... +74 °C

If the sensors of the VEGAPULS PS6*.DX/D_***P/F*** are operated with higher temperatures than indicated in the table above, it shall be guaranteed by suitable measures 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

VEGAPULS PS6*.DX/D_*H***
VEGAPULS PS61/62/63.DX/D_*D***
VEGAPULS PS6*.DX/D_*P/F***

Supply circuit
(terminals Kl1 [+], Kl2 [-]
in the "d"-terminal compartment)

U = 20 V ... 36 V DC
U_m = 253 V AC

VEGAPULS PS6*.DX/D_*V***
VEGAPULS PS61/62/63.DX/D_*E***

Supply circuit
(terminals Kl1 [+],
Kl2 [-] in the "d"-terminal
compartment)

U = 20 V ... 253 V AC
U_m = 253 V AC

Signal-circuit (terminals KL4 [+] KL5 [-] in the "d"-terminal compartment)	I = 4 ... 20 mA with superimposed HART Signal U_m = 253 V AC **VEGAPULS PS6*.DX/D_***H/V***** **VEGAPULS PS61/62/63.DX/D_***D/E***** **VEGAPULS PS6*.DX/D_***P/F*****
Control and display circuit (terminals Nos. 5,6,7,8 in the electronics compartment)	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 radar sensors type series VEGAPULS PS6*.*** and the external VEGADIS61 display unit are complied with if the total inductance and capacitance of the connecting line between radar sensors type series VEGAPULS PS6*.*** and the external VEGADIS61 display unit (L_{cable} = 100 µH and C_{cable} = 2.8 µF) is not exceeded. A control and display module (A/B module or PLICSCOM) installed in the radar sensors type series VEGAPULS PS6*.*** and a connected VEGACONNECT3 have been considered.
Communication circuit (I^2C-bus socket in the electronics compartment)	Type of protection Intrinsic Safety EEx ia IIC For connection to the intrinsically safe signal circuit of a VEGA interface converter VEGACONNECT3 (PTB 01 ATEX 2007).
Control and display module circuit (spring contacts in the electronics compartment)	Type of protection Intrinsic Safety EEx ia IIC For connection to the VEGA control and display module (A/B module or PLICSCOM).

The metal elements of the microwave sensor type series **VEGAPULS PS6*.DX/D_***H/V***** and **VEGAPULS PS61/62/63.DX/D_***D/E***** are electrically connected to the earth terminals.

For the microwave sensor type series **VEGAPULS PS6*.DX/D_***P/F***** **with the barrier KLEMP2-2LPAD** the intrinsically safe signal circuit is galvanically isolated from the supply circuit up to a peak value of the nominal voltage of 375 V.

SUPPLEMENT TO EC-TYPE-EXAMINATION CERTIFICATE PTB 03 ATEX 2163 X

For the microwave sensor type series **VEGAPULS PS6*.DX/D_***H*** and **VEGAPULS PS61/62/63.DX/D_***D*** with the barrier KLEMP2-2LHD** the intrinsically safe signal circuit is galvanically isolated from the supply circuit up to a peak value of the nominal voltage of 375 V.

All other specifications remain without changes.

Special conditions for safe use

1. The radar sensors type series VEGAPULS PS6*.*** 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 radar sensors with metal enclosure with display window, with parts of enclosures out of plastic as well as sensors include surfaces that can become charged electrostatically (note warning label).
3. The radar sensors in the versions with standpipe or antenna extension shall be installed in such a way that contact between the antenna and the tank wall will be excluded with sufficient safety, considering the tank installations and the flow conditions inside the tank.
4. When used as category-1/2 equipment, the level measuring instruments shall be connected to the equipotential bonding conductor (contact resistance ≤ 1MΩ) (e.g. using the earthing terminal) in order to prevent metal elements from being charged electrostatically.
5. For applications where equipment of category 1/2 is required, all parts of the radar sensors which are in contact with the medium must only be used in such media, against which they are sufficiently resistant.
6. With the radar sensors in the version with ball valve it is to be made certain that the ball valve is locked before the separation of the flange connection.
7. With the radar sensors in the version with flushing connector it is to be made certain that using the radar sensors as an apparatus of category 1/2 the degree of protection IP 67 at the connection to the check valve is guaranteed. After removing the check valve or the flushing system at the check valve, the opening with a suitable plug is to be locked in such a way, that the degree of protection IP 67 is kept.
8. The flameproof terminal compartment with integrated electronics shall be connected by means of suitable cable entries and conduit systems, which meet the requirements of in EN 50018, sections 13.1 and 13.2, and for which a separate examination certificate has been issued.
9. Cable entries (conduit threads) and sealing plugs of simple design shall not be used. Should the flameproof terminal compartment with integrated electronics be connected by means of a conduit entry which has been approved for this purpose, the required sealing device shall be provided directly at the housing.
10. Non-used openings shall be sealed according to EN 50018, section 11.9.
11. The connecting line of the flameproof terminal compartment with integrated electronic shall be installed to provide for permanent wiring and sufficient protection against mechanical damage.

Physikalisch-Technische Bundesanstalt

Braunschweig und Berlin

SUPPLEMENT TO EC-TYPE-EXAMINATION CERTIFICATE PTB 03 ATEX 2163 X

Test report: PTB Ex 05-25327

Zertifizierungsstelle Explosionsschutz
By order:

Dr.-Ing. U. Johannsmeyer
Direktor und Professor

Braunschweig, January 10, 2006

Physikalisch-Technische Bundesanstalt

Braunschweig und Berlin

3. SUPPLEMENT

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

to EC-TYPE-EXAMINATION CERTIFICATE PTB 03 ATEX 2163 X

(Translation)

Equipment: Radar sensors VEGAPULS type series VEGAPULS PS6*.DX/D_***D/E/H/P/F/V***

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

Manufacturer: VEGA Grieshaber KG

Address: Am Hohenstein 113, 77761 Schiltach, Germany

Description of supplements and modifications

The radar sensors VEGAPULS type series VEGAPULS PS6*.DX/D_***D/E/H/P/F/V*** are extended for the type series PS6*.DX/D_***K/L***. In the type series VEGAPULS PS6*.DX/D_***K/L*** the barrier KLEMP2-2LPA/FFD with the related electronic assembly PS60PAS or PS60FFS is used.

Other changes concern the internal and the external construction, the electrical data 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.

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.

VEGAPULS PS6*.DX/D ***H* with barrier P2-2LH**

Category-1/2 equipment

temperature class	temperature at the sensor	ambient temperature for the electronic system
T6	-20 ... +60 °C	-40 ... +55 °C
T5, T4, T3, T2, T1	-20 ... +60 °C	-40 ... +70 °C

For applications requiring category-1/2 equipment, the media process pressure has to be between 0.8 bar and 1.1 bar.

If the sensors of the VEGAPULS PS6*.DX/D_***H*** are operated with higher temperatures than indicated in the table above, it shall be guaranteed by suitable measures 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	-60 ... + 85 °C	-40 ... +55 °C
T5	-60 ... +100 °C	-40 ... +70 °C
T4	-60 ... +135 °C	-40 ... +70 °C
T3	-60 ... +200 °C	-40 ... +70 °C
T2	-60 ... +300 °C	-40 ... +70 °C
T1	-60 ... +400 °C	-40 ... +70 °C

If the sensors of the VEGAPULS PS6*.DX/D_***H*** are operated with higher temperatures than indicated in the table above, it shall be guaranteed by suitable measures 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.

Radar-Sensoren Typenreihe VEGAPULS PS63.DX/D_***H*** (Version for operating at process temperatures to -170 °C)

temperature class	temperature at the sensor	ambient temperature for the electronic system
T6	-170 ... + 85 °C	-40 ... +55 °C
T5	-170 ... +100 °C	-40 ... +70 °C
T4	-170 ... +135 °C	-40 ... +70 °C
T3, T2, T1	-170 ... +150 °C	-40 ... +70 °C

If the sensors of the VEGAPULS PS6*.DX/D_***H*** (Version for operating at process temperatures to -170 °C) are operated with higher temperatures than indicated in the table above, it shall be guaranteed by suitable measures 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.

3. SUPPLEMENT TO EC-TYPE-EXAMINATION CERTIFICATE PTB 03 ATEX 2163 X

VEGAPULS PS61/62/63.DX/D ***D* with barrier P2-2LH**

Category-1/2 equipment

temperature class	temperature at the sensor	ambient temperature for the electronic system
T5	-20 ... +60 °C	-40 ... +45 °C
T4, T3, T2, T1	-20 ... +60 °C	-40 ... +68 °C

For applications requiring category-1/2 equipment, the media process pressure has to be between 0.8 bar and 1.1 bar.

If the sensors of the VEGAPULS PS61/62/63.DX/D_***D*** are operated with higher temperatures than indicated in the table above, it shall be guaranteed by suitable measures 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
T5	-60 ... +100 °C	-40 ... +45 °C
T4	-60 ... +135 °C	-40 ... +68 °C
T3, T2, T1	-60 ... +200 °C	-40 ... +68 °C

If the sensors of the VEGAPULS PS61/62/63.DX/D_***D*** are operated with higher temperatures than indicated in the table above, it shall be guaranteed by suitable measures 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.

Radar-Sensoren Typenreihe VEGAPULS PS63.DX/D_***D*** (Version for operating at process temperatures to -170 °C)

temperature class	temperature at the sensor	ambient temperature for the electronic system
T5	-170 ... +100 °C	-40 ... +45 °C
T4	-170 ... +135 °C	-40 ... +68 °C
T3, T2, T1	-170 ... +150 °C	-40 ... +68 °C

If the sensors of the VEGAPULS PS63.DX/D_***D*** (Version for operating at process temperatures to -170°C)are operated with higher temperatures than indicated in the table above, it shall be guaranteed by suitable measures 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.

VEGAPULS PS6*.DX/D ***V* with barrier P2-4LH**

Category-1/2 equipment

temperature class	temperature at the sensor	ambient temperature for the electronic system
T6	-20 ... +60 °C	-40 ... +55 °C
T5, T4, T3, T2, T1	-20 ... +60 °C	-40 ... +64 °C

For applications requiring category-1/2 equipment, the media process pressure has to be between 0.8 bar and 1.1 bar.

If the sensors of the VEGAPULS PS6*.DX/D_***V*** are operated with higher temperatures than indicated in the table above, it shall be guaranteed by suitable measures 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	-60 ... + 85 °C	-40 ... +55 °C
T5	-60 ... +100 °C	-40 ... +64 °C
T4	-60 ... +135 °C	-40 ... +64 °C
T3	-60 ... +200 °C	-40 ... +64 °C
T2	-60 ... +300 °C	-40 ... +64 °C
T1	-60 ... +400 °C	-40 ... +64 °C

If the sensors of the VEGAPULS PS6*.DX/D_***V*** are operated with higher temperatures than indicated in the table above, it shall be guaranteed by suitable measures 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.

3. SUPPLEMENT TO EC-TYPE-EXAMINATION CERTIFICATE PTB 03 ATEX 2163 X

Radar-Sensoren Typenreihe VEGAPULS PS63.DX/D_***V*** (Version for operating at process temperatures to -170 °C)

temperature class	temperature at the sensor	ambient temperature for the electronic system
T6	-170 ... + 85 °C	-40 ... +55 °C
T5	-170 ... +100 °C	-40 ... +64 °C
T4	-170 ... +135 °C	-40 ... +64 °C
T3, T2, T1	-170 ... +150 °C	-40 ... +64 °C

If the sensors of the VEGAPULS PS6*.DX/D_***V*** (Version for operating at process temperatures to -170 °C) are operated with higher temperatures than indicated in the table above, it shall be guaranteed by suitable measures 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.

VEGAPULS PS61/62/63.DX/D ***E* with barrier P2-4LH**

Category-1/2 equipment

temperature class	temperature at the sensor	ambient temperature for the electronic system
T5	-20 ... +60 °C	-40 ... +45 °C
T4, T3, T2, T1	-20 ... +60 °C	-40 ... +64 °C

For applications requiring category-1/2 equipment, the media process pressure has to be between 0.8 bar and 1.1 bar.

If the sensors of the VEGAPULS PS61/62/63.DX/D_***E*** are operated with higher temperatures than indicated in the table above, it shall be guaranteed by suitable measures 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
T5	-60 ... +100 °C	-40 ... +45 °C
T4	-60 ... +135 °C	-40 ... +64 °C
T3, T2, T1	-60 ... +200 °C	-40 ... +64 °C

If the sensors of the VEGAPULS PS61/62/63.DX/D_***E*** are operated with higher temperatures than indicated in the table above, it shall be guaranteed by suitable measures 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.

Radar-Sensoren Typenreihe VEGAPULS PS63.DX/D_***E*** (Version for operating at process temperatures to -170 °C)

temperature class	temperature at the sensor	ambient temperature for the electronic system
T5	-170 ... +100 °C	-40 ... +45 °C
T4	-170 ... +135 °C	-40 ... +64 °C
T3, T2, T1	-170 ... +150 °C	-40 ... +64 °C

If the sensors of the VEGAPULS PS63.DX/D_***E*** (Version for operating at process temperatures to -170 °C) are operated with higher temperatures than indicated in the table above, it shall be guaranteed by suitable measures 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.

VEGAPULS PS6*.DX/D ***H* with barrier KLEMP2-2LHD**

Category-1/2 equipment

temperature class	temperature at the sensor	ambient temperature for the electronic system
T6	-20 ... +60 °C	-40 ... +55 °C
T5, T4, T3, T2, T1	-20 ... +60 °C	-40 ... +68 °C

For applications requiring category-1/2 equipment, the media process pressure has to be between 0.8 bar and 1.1 bar.

If the sensors of the VEGAPULS PS6*.DX/D_***H*** are operated with higher temperatures than indicated in the table above, it shall be guaranteed by suitable measures 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.

3. SUPPLEMENT TO EC-TYPE-EXAMINATION CERTIFICATE PTB 03 ATEX 2163 X

Category-2 equipment

temperature class	temperature at the sensor	ambient temperature for the electronic system
T6	-60 ... + 85 °C	-40 ... +55 °C
T5	-60 ... +100 °C	-40 ... +68 °C
T4	-60 ... +135 °C	-40 ... +68 °C
T3	-60 ... +200 °C	-40 ... +68 °C
T2	-60 ... +300 °C	-40 ... +68 °C
T1	-60 ... +400 °C	-40 ... +68 °C

If the sensors of the VEGAPULS PS6*.DX/D_***H*** are operated with higher temperatures than indicated in the table above, it shall be guaranteed by suitable measures 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.

Radar-Sensoren Typenreihe VEGAPULS PS63.DX/D_***H*** (Version for operating at process temperatures to -170 °C)

temperature class	temperature at the sensor	ambient temperature for the electronic system
T6	-170 ... + 85 °C	-40 ... +55 °C
T5	-170 ... +100 °C	-40 ... +68 °C
T4	-170 ... +135 °C	-40 ... +68 °C
T3, T2, T1	-170 ... +150 °C	-40 ... +68 °C

If the sensors of the VEGAPULS PS6*.DX/D_***H*** (Version for operating at process temperatures to -170 °C) are operated with higher temperatures than indicated in the table above, it shall be guaranteed by suitable measures 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.

3. SUPPLEMENT TO EC-TYPE-EXAMINATION CERTIFICATE PTB 03 ATEX 2163 X

VEGAPULS PS61/62/63.DX/D ***D* with barrier KLEMP2-2LHD**

Category-1/2 equipment

temperature class	temperature at the sensor	ambient temperature for the electronic system
T5	-20 ... +60 °C	-40 ... +45 °C
T4, T3, T2, T1	-20 ... +60 °C	-40 ... +68 °C

For applications requiring category-1/2 equipment, the media process pressure has to be between 0.8 bar and 1.1 bar.

If the sensors of the VEGAPULS PS61/62/63.DX/D_***D*** are operated with higher temperatures than indicated in the table above, it shall be guaranteed by suitable measures 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
T5	-60 ... +100 °C	-40 ... +45 °C
T4*	-60 ... +135 °C	-40 ... +68 °C
T3, T2, T1*	-60 ... +200 °C	-40 ... +68 °C

* ab 130 °C mit Temperaturzwischenstück

If the sensors of the VEGAPULS PS61/62/63.DX/D_***D*** are operated with higher temperatures than indicated in the table above, it shall be guaranteed by suitable measures 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.

Radar-Sensoren Typenreihe VEGAPULS PS63.DX/D_***D*** (Version for operating at process temperatures to -170 °C)

temperature class	temperature at the sensor	ambient temperature for the electronic system
T5	-170 ... +100 °C	-40 ... +45 °C
T4	-170 ... +135 °C	-40 ... +68 °C
T3, T2, T1	-170 ... +150 °C	-40 ... +68 °C

If the sensors of the VEGAPULS PS63.DX/D_***D*** (Version for operating at process temperatures to -170°C) are operated with higher temperatures than indicated in the table above, it shall be guaranteed by suitable measures 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.

VEGAPULS PS6*.DX/D ***P/F* with barrier KLEMP2-2LPAD**

Category-1/2 equipment

temperature class	temperature at the sensor	ambient temperature for the electronic system
T6	-20 ... +60 °C	-40 ... +47 °C
T5	-20 ... +60 °C	-40 ... +62 °C
T4, T3, T2, T1	-20 ... +60 °C	-40 ... +74 °C

For applications requiring category-1/2 equipment, the media process pressure has to be between 0.8 bar and 1.1 bar.

If the sensors of the VEGAPULS PS6*.DX/D_***P/F*** are operated with higher temperatures than indicated in the table above, it shall be guaranteed by suitable measures 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	-60 ... + 85 °C	-40 ... +47 °C
T5	-60 ... +100 °C	-40 ... +62 °C
T4	-60 ... +135 °C	-40 ... +74 °C
T3	-60 ... +200 °C	-40 ... +74 °C
T2	-60 ... +300 °C	-40 ... +74 °C
T1	-60 ... +400 °C	-40 ... +74 °C

If the sensors of the VEGAPULS PS6*.DX/D_***P/F*** are operated with higher temperatures than indicated in the table above, it shall be guaranteed by suitable measures 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.

3. SUPPLEMENT TO EC-TYPE-EXAMINATION CERTIFICATE PTB 03 ATEX 2163 X

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

Radar-Sensoren Typenreihe VEGAPULS PS63.DX/D_***P/F*** (Version for operating at process temperatures to -170 °C)

temperature class	temperature at the sensor	ambient temperature for the electronic system
T6	-170 ... + 85 °C	-40 ... +47 °C
T5	-170 ... +100 °C	-40 ... +62 °C
T4	-170 ... +135 °C	-40 ... +74 °C
T3, T2, T1	-170 ... +150 °C	-40 ... +74 °C

If the sensors of the VEGAPULS PS6*.DX/D_***P/F*** (Version for operating at process temperatures to -170 °C) are operated with higher temperatures than indicated in the table above, it shall be guaranteed by suitable measures 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.

VEGAPULS PS6*.DX/D ***P/F* with barrier KLEMP2-2LPA/FFD**

Category-1/2 equipment

temperature class	temperature at the sensor	ambient temperature for the electronic system
T6	-20 ... +60 °C	-40 ... +47 °C
T5	-20 ... +60 °C	-40 ... +62 °C
T4, T3, T2, T1	-20 ... +60 °C	-40 ... +74 °C

For applications requiring category-1/2 equipment, the media process pressure has to be between 0.8 bar and 1.1 bar.

If the sensors of the VEGAPULS PS6*.DX/D_***P/F*** are operated with higher temperatures than indicated in the table above, it shall be guaranteed by suitable measures 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.

3. SUPPLEMENT TO EC-TYPE-EXAMINATION CERTIFICATE PTB 03 ATEX 2163 X

Category-2 equipment

temperature class	temperature at the sensor	ambient temperature for the electronic system
T6	-60 ... + 85 °C	-40 ... +47 °C
T5	-60 ... +100 °C	-40 ... +62 °C
T4	-60 ... +135 °C	-40 ... +74 °C
T3	-60 ... +200 °C	-40 ... +74 °C
T2	-60 ... +300 °C	-40 ... +74 °C
T1	-60 ... +400 °C	-40 ... +74 °C

If the sensors of the VEGAPULS PS6*.DX/D_***P/F*** are operated with higher temperatures than indicated in the table above, it shall be guaranteed by suitable measures 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.

Radar-Sensoren Typenreihe VEGAPULS PS63.DX/D_***P/F*** (Version for operating at process temperatures to -170 °C)

temperature class	temperature at the sensor	ambient temperature for the electronic system
T6	-170 ... + 85 °C	-40 ... +47 °C
T5	-170 ... +100 °C	-40 ... +62 °C
T4	-170 ... +135 °C	-40 ... +74 °C
T3, T2, T1	-170 ... +150 °C	-40 ... +74 °C

If the sensors of the VEGAPULS PS6*.DX/D_***P/F*** (Version for operating at process temperatures to -170 °C) are operated with higher temperatures than indicated in the table above, it shall be guaranteed by suitable measures 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.

VEGAPULS PS61/62/63.DX/D ***K/L*** with barrier KLEMP2-2LPA/FFD

Category-1/2 equipment

temperature class	temperature at the sensor	ambient temperature for the electronic system
T5	-20 ... +60 °C	-40 ... +45 °C
T4, T3, T2, T1	-20 ... +60 °C	-40 ... +74 °C

For applications requiring category-1/2 equipment, the media process pressure has to be between 0.8 bar and 1.1 bar.

If the sensors of the VEGAPULS PS61/62/63.DX/D_***K/L*** are operated with higher temperatures than indicated in the table above, it shall be guaranteed by suitable measures 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
T5	-60 ... +100 °C	-40 ... +45 °C
T4	-60 ... +135 °C	-40 ... +74 °C
T3, T2, T1	-60 ... +200 °C	-40 ... +74 °C

If the sensors of the VEGAPULS PS61/62/63.DX/D_***K/L*** are operated with higher temperatures than indicated in the table above, it shall be guaranteed by suitable measures 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.

Radar-Sensoren Typenreihe VEGAPULS PS63.DX/D_***K/L*** (Version for operating at process temperatures to -170 °C)

temperature class	temperature at the sensor	ambient temperature for the electronic system
T5	-170 ... +100 °C	-40 ... +45 °C
T4	-170 ... +135 °C	-40 ... +74 °C
T3, T2, T1	-170 ... +150 °C	-40 ... +74 °C

If the sensors of the VEGAPULS PS63.DX/D_***K/L*** (Version for operating at process temperatures to -170 °C) are operated with higher temperatures than indicated in the table above, it shall be guaranteed by suitable measures 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.

3. SUPPLEMENT TO EC-TYPE-EXAMINATION CERTIFICATE PTB 03 ATEX 2163 X

Electrical data

	VEGAPULS PS6*.DX/D_*H***** **VEGAPULS PS61/62/63.DX/D_***D*****
Supply circuit (terminals KI1 [+], KI2 [-] in the "d"-terminal compartment)	U = 20 V ... 36 V DC U_m = 253 V AC
	VEGAPULS PS6*.DX/D_*K/L/P/F*****
Supply circuit (terminals KI1 [+], KI2 [-] in the "d"-terminal compartment)	U = 16 V ... 36 V DC U_m = 253 V AC
	VEGAPULS PS6*.DX/D_*V***** **VEGAPULS PS61/62/63.DX/D_***E*****
Supply circuit (terminals KI1 [+], KI2 [-] in the "d"-terminal compartment)	U = 20 V ... 253 V AC U_m = 253 V AC
Signal-circuit (terminals KL4 [+] KL5 [-] in the "d"-terminal compartment)	I = 4 ... 20 mA with superimposed HART Signal U_m = 253 V AC
	VEGAPULS PS6*.DX/D_*H/V***** **VEGAPULS PS61/62/63.DX/D_***D/E***** **VEGAPULS PS6*.DX/D_***K/L/P/F*****
Control and display circuit (terminals Nos. 5,6,7,8 in the electronics compartment)	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 radar sensors, type series VEGAPULS PS6*.*** and the external VEGADIS61 display unit are complied with if the total inductance and capacitance of the connecting line between radar sensors type series VEGAPULS PS6*.*** and the external VEGADIS61 display unit (L_{cable} = 100 µH and C_{cable} = 2.8 µF) is not exceeded.

Physikalisch-Technische Bundesanstalt

Braunschweig und Berlin

3. SUPPLEMENT TO EC-TYPE-EXAMINATION CERTIFICATE PTB 03 ATEX 2163 X

	A control and display module (A/B module or PLICSCOM) installed in the radar sensors type series VEGAPULS PS6*.*** and a connected VEGACONNECT3 have been considered.
Communication circuit (I^2C-bus socket in the electronics compartment)	Type of protection Intrinsic Safety EEx ia IIC For connection to the intrinsically safe signal circuit of a VEGA interface converter VEGACONNECT3 (PTB 01 ATEX 2007).
Control and display module circuit (spring contacts in the electronics compartment)	Type of protection Intrinsic Safety EEx ia IIC For connection to the VEGA control and display module (A/B module or PLICSCOM).

In the versions with the barriers KLEMP2-2LPAD and KLEMP2-2LHD the intrinsically safe signal circuits of the radar sensors VEGAPULS PS6*.DX / D_ ***are galvanically isolated from the supply circuit up to a peak value of the nominal voltage of 375 V.

In the remaining versions of the radar sensors VEGAPULS PS6*.DX / D_ *** the intrinsically safe signal circuits are earthed and connected with the external and internal earthing clip.

All other specifications remain without changes.

Test report: PTB Ex 06-26257

Zertifizierungsstelle Explosionsschutz
By order:

Dr.-Ing. U. Johannsmeyer
Direktor und Professor

Braunschweig, November 10, 2006

Physikalisch-Technische Bundesanstalt

Braunschweig und Berlin

4. SUPPLEMENT

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

to EC-TYPE-EXAMINATION CERTIFICATE PTB 03 ATEX 2163 X

(Translation)

Equipment: Radar sensors VEGAPULS type series VEGAPULS PS6*.DX/D_***D/E/K/L/H/P/F/V***

Marking:  **II 1/2 G or II 2 G EEx d 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**
EN 60079-1:2004

The name of the radar sensors VEGAPULS type series VEGAPULS PS6*.DX/D_*** D/E/K/L/H/P/F/V *** is changed into radar sensors type series VEGAPULS PS6*.D(*)****D/E/K/L/H/P/F/V****. They are also made and operated according to the test documents listed under 3 of the test report.

Type list:
VEGAPULS PS61.D****D/E/K/L/H/P/F/V****
VEGAPULS PS62.D*****D/E/K/L/H/P/F/V****
VEGAPULS PS63.D****D/E/K/L/H/P/F/V****
VEGAPULS PS65.D****H/P/F/V****
VEGAPULS PS66.D*****H/P/F/V****

The changes concern the application of the above mentioned standards, the external construction (a second pressure compensation element), the electrical data, the marking and the name of the type in the temperature tables.

The marking changes as follows:

 **1/2 G or II 2 G Ex d ia IIC T6**

4. SUPPLEMENT TO EC-TYPE-EXAMINATION CERTIFICATE PTB 03 ATEX 2163 X

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.

VEGAPULS PS6*.D(*)**H**** with barrier P2-2LH

Category-1/2 equipment

temperature class	temperature at the sensor	ambient temperature for the electronic system
T6	-20 ... +60 °C	-40 ... +55 °C
T5, T4, T3, T2, T1	-20 ... +60 °C	-40 ... +70 °C

For applications requiring category-1/2 equipment, the media process pressure has to be between 0.8 bar and 1.1 bar.

If the sensors of the VEGAPULS PS6*.D(*)****H**** are operated with higher temperatures than indicated in the table above, it shall be guaranteed by suitable measures 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	-60 ... + 85 °C	-40 ... +55 °C
T5	-60 ... +100 °C	-40 ... +70 °C
T4	-60 ... +135 °C	-40 ... +70 °C
T3	-60 ... +200 °C	-40 ... +70 °C
T2	-60 ... +300 °C	-40 ... +70 °C
T1	-60 ... +400 °C	-40 ... +70 °C

If the sensors of the VEGAPULS PS6*.D(*)****H**** are operated with higher temperatures than indicated in the table above, it shall be guaranteed by suitable measures 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.

4. SUPPLEMENT TO EC-TYPE-EXAMINATION CERTIFICATE PTB 03 ATEX 2163 X

Radar-Sensoren Typenreihe VEGAPULS PS6*.D(*)****H**** (Version for operating at process temperatures to -170 °C)

temperature class	temperature at the sensor	ambient temperature for the electronic system
T6	-170 ... + 85 °C	-40 ... +55 °C
T5	-170 ... +100 °C	-40 ... +70 °C
T4	-170 ... +135 °C	-40 ... +70 °C
T3, T2, T1	-170 ... +150 °C	-40 ... +70 °C

If the sensors of the VEGAPULS PS6*.D(*)****H**** (Version for operating at process temperatures to -170 °C) are operated with higher temperatures than indicated in the table above, it shall be guaranteed by suitable measures 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.

VEGAPULS PS61/62/63.D(*)**D**** with barrier P2-2LH

Category-1/2 equipment

temperature class	temperature at the sensor	ambient temperature for the electronic system
T5	-20 ... +60 °C	-40 ... +45 °C
T4, T3, T2, T1	-20 ... +60 °C	-40 ... +68 °C

For applications requiring category-1/2 equipment, the media process pressure has to be between 0.8 bar and 1.1 bar.

If the sensors of the VEGAPULS PS61/62/63.D(*)****D**** are operated with higher temperatures than indicated in the table above, it shall be guaranteed by suitable measures 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
T5	-60 ... +100 °C	-40 ... +45 °C
T4	-60 ... +135 °C	-40 ... +68 °C
T3, T2, T1	-60 ... +200 °C	-40 ... +68 °C

If the sensors of the VEGAPULS PS61/62/63.D(*)****D**** are operated with higher temperatures than indicated in the table above, it shall be guaranteed by suitable measures 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.

Radar-Sensoren Typenreihe VEGAPULS PS61/62/63.D(*)****D**** (Version for operating at process temperatures to -170 °C)

temperature class	temperature at the sensor	ambient temperature for the electronic system
T5	-170 ... +100 °C	-40 ... +45 °C
T4	-170 ... +135 °C	-40 ... +68 °C
T3, T2, T1	-170 ... +150 °C	-40 ... +68 °C

If the sensors of the VEGAPULS PS61/62/63.D(*)****D**** (Version for operating at process temperatures to -170°C)are operated with higher temperatures than indicated in the table above, it shall be guaranteed by suitable measures 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.

VEGAPULS PS6*.D(*)**V**** with barrier P2-4LH

Category-1/2 equipment

temperature class	temperature at the sensor	ambient temperature for the electronic system
T6	-20 ... +60 °C	-40 ... +55 °C
T5, T4, T3, T2, T1	-20 ... +60 °C	-40 ... +64 °C

For applications requiring category-1/2 equipment, the media process pressure has to be between 0.8 bar and 1.1 bar.

If the sensors of the VEGAPULS PS6*.D(*)****V**** are operated with higher temperatures than indicated in the table above, it shall be guaranteed by suitable measures 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.

4. SUPPLEMENT TO EC-TYPE-EXAMINATION CERTIFICATE PTB 03 ATEX 2163 X

Category-2 equipment

temperature class	temperature at the sensor	ambient temperature for the electronic system
T6	-60 ... + 85 °C	-40 ... +55 °C
T5	-60 ... +100 °C	-40 ... +64 °C
T4	-60 ... +135 °C	-40 ... +64 °C
T3	-60 ... +200 °C	-40 ... +64 °C
T2	-60 ... +300 °C	-40 ... +64 °C
T1	-60 ... +400 °C	-40 ... +64 °C

If the sensors of the VEGAPULS PS6*.D(*)****V**** are operated with higher temperatures than indicated in the table above, it shall be guaranteed by suitable measures 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.

Radar-Sensoren Typenreihe VEGAPULS PS6*.D(*)****V**** (Version for operating at process temperatures to -170 °C)

temperature class	temperature at the sensor	ambient temperature for the electronic system
T6	-170 ... + 85 °C	-40 ... +55 °C
T5	-170 ... +100 °C	-40 ... +64 °C
T4	-170 ... +135 °C	-40 ... +64 °C
T3, T2, T1	-170 ... +150 °C	-40 ... +64 °C

If the sensors of the VEGAPULS PS6*.D(*)****V**** (Version for operating at process temperatures to -170 °C) are operated with higher temperatures than indicated in the table above, it shall be guaranteed by suitable measures 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.

VEGAPULS PS61/62/63.D(*)**E**** with barrier P2-4LH**

Category-1/2 equipment

temperature class	temperature at the sensor	ambient temperature for the electronic system
T5	-20 ... +60 °C	-40 ... +45 °C
T4, T3, T2, T1	-20 ... +60 °C	-40 ... +64 °C

For applications requiring category-1/2 equipment, the media process pressure has to be between 0.8 bar and 1.1 bar.

If the sensors of the VEGAPULS PS61/62/63.D(*)****E**** are operated with higher temperatures than indicated in the table above, it shall be guaranteed by suitable measures 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
T5	-60 ... +100 °C	-40 ... +45 °C
T4	-60 ... +135 °C	-40 ... +64 °C
T3, T2, T1	-60 ... +200 °C	-40 ... +64 °C

If the sensors of the VEGAPULS PS61/62/63.D(*)****E**** are operated with higher temperatures than indicated in the table above, it shall be guaranteed by suitable measures 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.

Radar-Sensoren Typenreihe VEGAPULS PS61/62/63.D(*)****E**** (Version for operating at process temperatures to -170 °C)

temperature class	temperature at the sensor	ambient temperature for the electronic system
T5	-170 ... +100 °C	-40 ... +45 °C
T4	-170 ... +135 °C	-40 ... +64 °C
T3, T2, T1	-170 ... +150 °C	-40 ... +64 °C

If the sensors of the VEGAPULS PS61/62/63.D(*)****E**** (Version for operating at process temperatures to -170 °C) are operated with higher temperatures than indicated in the table above, it shall be guaranteed by suitable measures 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.

4. SUPPLEMENT TO EC-TYPE-EXAMINATION CERTIFICATE PTB 03 ATEX 2163 X

VEGAPULS PS6*.D(*)**H**** with barrier KLEMP2-2LHD

Category-1/2 equipment

temperature class	temperature at the sensor	ambient temperature for the electronic system
T6	-20 ... +60 °C	-40 ... +55 °C
T5, T4, T3, T2, T1	-20 ... +60 °C	-40 ... +68 °C

For applications requiring category-1/2 equipment, the media process pressure has to be between 0.8 bar and 1.1 bar.

If the sensors of the VEGAPULS PS6*.D(*)****H**** are operated with higher temperatures than indicated in the table above, it shall be guaranteed by suitable measures 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	-60 ... + 85 °C	-40 ... +55 °C
T5	-60 ... +100 °C	-40 ... +68 °C
T4	-60 ... +135 °C	-40 ... +68 °C
T3	-60 ... +200 °C	-40 ... +68 °C
T2	-60 ... +300 °C	-40 ... +68 °C
T1	-60 ... +400 °C	-40 ... +68 °C

If the sensors of the VEGAPULS PS6*.D(*)****H**** are operated with higher temperatures than indicated in the table above, it shall be guaranteed by suitable measures 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.

Radar-Sensoren Typenreihe VEGAPULS PS6*.D(*)****H**** (Version for operating at process temperatures to -170 °C)

temperature class	temperature at the sensor	ambient temperature for the electronic system
T6	-170 ... + 85 °C	-40 ... +55 °C
T5	-170 ... +100 °C	-40 ... +68 °C
T4	-170 ... +135 °C	-40 ... +68 °C
T3, T2, T1	-170 ... +150 °C	-40 ... +68 °C

If the sensors of the VEGAPULS PS6*.D(*)****H**** (Version for operating at process temperatures to -170 °C) are operated with higher temperatures than indicated in the table above, it shall be guaranteed by suitable measures 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.

VEGAPULS PS61/62/63.D(*)**D**** with barrier KLEMP2-2LHD

Category-1/2 equipment

temperature class	temperature at the sensor	ambient temperature for the electronic system
T5	-20 ... +60 °C	-40 ... +45 °C
T4, T3, T2, T1	-20 ... +60 °C	-40 ... +68 °C

For applications requiring category-1/2 equipment, the media process pressure has to be between 0.8 bar and 1.1 bar.

If the sensors of the VEGAPULS PS61/62/63.D(*)****D**** are operated with higher temperatures than indicated in the table above, it shall be guaranteed by suitable measures 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
T5	-60 ... +100 °C	-40 ... +45 °C
T4*	-60 ... +135 °C	-40 ... +68 °C
T3, T2, T1*	-60 ... +200 °C	-40 ... +68 °C

* ab 130 °C mit Temperaturzwischenstück

If the sensors of the VEGAPULS PS61/62/63.D(*)****D**** are operated with higher temperatures than indicated in the table above, it shall be guaranteed by suitable measures 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.

4. SUPPLEMENT TO EC-TYPE-EXAMINATION CERTIFICATE PTB 03 ATEX 2163 X

Radar-Sensoren Typenreihe VEGAPULS PS61/62/63.D(*)****D**** (Version for operating at process temperatures to -170 °C)

temperature class	temperature at the sensor	ambient temperature for the electronic system
T5	-170 ... +100 °C	-40 ... +45 °C
T4	-170 ... +135 °C	-40 ... +68 °C
T3, T2, T1	-170 ... +150 °C	-40 ... +68 °C

If the sensors of the VEGAPULS PS61/62/63.D(*)****D**** (Version for operating at process temperatures to -170°C) are operated with higher temperatures than indicated in the table above, it shall be guaranteed by suitable measures 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.

VEGAPULS PS6*.D(*)**P/F**** with barrier KLEMP2-2LPAD

Category-1/2 equipment

temperature class	temperature at the sensor	ambient temperature for the electronic system
T6	-20 ... +60 °C	-40 ... +47 °C
T5	-20 ... +60 °C	-40 ... +62 °C
T4, T3, T2, T1	-20 ... +60 °C	-40 ... +74 °C

For applications requiring category-1/2 equipment, the media process pressure has to be between 0.8 bar and 1.1 bar.

If the sensors of the VEGAPULS PS6*.D(*)****P/F**** are operated with higher temperatures than indicated in the table above, it shall be guaranteed by suitable measures 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.

4. SUPPLEMENT TO EC-TYPE-EXAMINATION CERTIFICATE PTB 03 ATEX 2163 X

Category-2 equipment

temperature class	temperature at the sensor	ambient temperature for the electronic system
T6	-60 ... + 85 °C	-40 ... +47 °C
T5	-60 ... +100 °C	-40 ... +62 °C
T4	-60 ... +135 °C	-40 ... +74 °C
T3	-60 ... +200 °C	-40 ... +74 °C
T2	-60 ... +300 °C	-40 ... +74 °C
T1	-60 ... +400 °C	-40 ... +74 °C

If the sensors of the VEGAPULS PS6*.D(*)****P/F**** are operated with higher temperatures than indicated in the table above, it shall be guaranteed by suitable measures 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.

Radar-Sensoren Typenreihe VEGAPULS PS6*.D(*)****P/F**** (Version for operating at process temperatures to -170 °C)

temperature class	temperature at the sensor	ambient temperature for the electronic system
T6	-170 ... + 85 °C	-40 ... +47 °C
T5	-170 ... +100 °C	-40 ... +62 °C
T4	-170 ... +135 °C	-40 ... +74 °C
T3, T2, T1	-170 ... +150 °C	-40 ... +74 °C

If the sensors of the VEGAPULS PS6*.D(*)****P/F**** (Version for operating at process temperatures to -170 °C) are operated with higher temperatures than indicated in the table above, it shall be guaranteed by suitable measures 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.

VEGAPULS PS6*.D(*)**P/F**** with barrier KLEMP2-2LPA/FFD

Category-1/2 equipment

temperature class	temperature at the sensor	ambient temperature for the electronic system
T6	-20 ... +60 °C	-40 ... +47 °C
T5	-20 ... +60 °C	-40 ... +62 °C
T4, T3, T2, T1	-20 ... +60 °C	-40 ... +74 °C

For applications requiring category-1/2 equipment, the media process pressure has to be between 0.8 bar and 1.1 bar.

If the sensors of the VEGAPULS PS6*.D(*)****P/F**** are operated with higher temperatures than indicated in the table above, it shall be guaranteed by suitable measures 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	-60 ... + 85 °C	-40 ... +47 °C
T5	-60 ... +100 °C	-40 ... +62 °C
T4	-60 ... +135 °C	-40 ... +74 °C
T3	-60 ... +200 °C	-40 ... +74 °C
T2	-60 ... +300 °C	-40 ... +74 °C
T1	-60 ... +400 °C	-40 ... +74 °C

If the sensors of the VEGAPULS PS6*.D(*)****P/F**** are operated with higher temperatures than indicated in the table above, it shall be guaranteed by suitable measures 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.

Radar-Sensoren Typenreihe VEGAPULS PS6*.D(*)****P/F**** (Version for operating at process temperatures to -170 °C)

temperature class	temperature at the sensor	ambient temperature for the electronic system
T6	-170 ... + 85 °C	-40 ... +47 °C
T5	-170 ... +100 °C	-40 ... +62 °C
T4	-170 ... +135 °C	-40 ... +74 °C
T3, T2, T1	-170 ... +150 °C	-40 ... +74 °C

If the sensors of the VEGAPULS PS6*.D(*)****P/F**** (Version for operating at process temperatures to -170 °C) are operated with higher temperatures than indicated in the table above, it shall be guaranteed by suitable measures 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.

VEGAPULS PS61/62/63.D(*)**K/L**** with barrier KLEMP2-2LPA/FFD

Category-1/2 equipment

temperature class	temperature at the sensor	ambient temperature for the electronic system
T5	-20 ... +60 °C	-40 ... +45 °C
T4, T3, T2, T1	-20 ... +60 °C	-40 ... +74 °C

For applications requiring category-1/2 equipment, the media process pressure has to be between 0.8 bar and 1.1 bar.

If the sensors of the VEGAPULS PS61/62/63.D(*)****K/L**** are operated with higher temperatures than indicated in the table above, it shall be guaranteed by suitable measures 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
T5	-60 ... +100 °C	-40 ... +45 °C
T4	-60 ... +135 °C	-40 ... +74 °C
T3, T2, T1	-60 ... +200 °C	-40 ... +74 °C

If the sensors of the VEGAPULS PS61/62/63.D(*)****K/L**** are operated with higher temperatures than indicated in the table above, it shall be guaranteed by suitable measures 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.

Radar-Sensoren Typenreihe VEGAPULS PS61/62/63.D(*)****K/L**** (Version for operating at process temperatures to -170 °C)

temperature class	temperature at the sensor	ambient temperature for the electronic system
T5	-170 ... +100 °C	-40 ... +45 °C
T4	-170 ... +135 °C	-40 ... +74 °C
T3, T2, T1	-170 ... +150 °C	-40 ... +74 °C

If the sensors of the VEGAPULS PS61/62/63.D(*)****K/L**** (Version for operating at process temperatures to -170 °C) are operated with higher temperatures than indicated in the table above, it shall be guaranteed by suitable measures 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 circuit (terminals Kl1 [+], Kl2 [-] in the "d"-terminal compartment)	**VEGAPULS PS6*.D(*)****H**** **VEGAPULS PS61/62/63.D(*)****D**** U = 20 V ... 36 V DC U_m = 253 V AC
Supply circuit (terminals Kl1 [+], Kl2 [-] in the "d"-terminal compartment)	**VEGAPULS PS61/62/63.D(*)****K/L**** **VEGAPULS PS*.D(*)****P/F**** U = 16 V ... 36 V DC U_m = 253 V AC
Supply circuit (terminals Kl1 [+], Kl2 [-] in the "d"-terminal compartment)	**VEGAPULS PS6*.D(*)****V**** **VEGAPULS PS61/62/63.D(*)****E**** U = 20 V ... 253 V AC U_m = 253 V AC
Signal-circuit (terminals KL4 [+], KL5 [-] in the "d"-terminal compartment)	I = 4 ... 20 mA with superimposed HART Signal U_m = 253 V AC **VEGAPULS PS6*.D(*)****D/E/K/L/H/P/F/V****
Control and display circuit (terminals 5,6,7,8 in the electronics compartment)	type of protection Intrinsic Safety Ex ia IIC Only for connection to the intrinsically safe supply and signal circuit of the external VEGADIS61 (PTB 02 ATEX 2136).

4. SUPPLEMENT TO EC-TYPE-EXAMINATION CERTIFICATE PTB 03 ATEX 2163 X

	The rules for interconnection of intrinsically safe circuits between the radar sensors VEGAPULS PS6*.*** and the external VEGADIS61 display unit are complied with if the total inductance and capacitance of the connecting line between the radar sensors VEGAPULS PS6*.*** and VEGADIS61 (L_{cable} = 100 µH and C_{cable} = 2.8 µF) is not exceeded. A control and display module installed in the VEGAPULS type series PS6*.*** and a connected VEGACONNECT have been considered. By using of the provided VEGA connecting cable between VEGAPULS PS6*.*** and the external display unit VEGADIS61 the following cable inductance and cable capacitance are taken into consideration from a length > 50 m: Li' = 0,62 µH/m $Ci'_{core/core}$ = 132 pF/m $Ci'_{core/screen}$ = 208 pF/m $Ci'_{screen/screen}$ = 192 pF/m
Communication circuit (I^2C-bus socket in the electronics compartment)	type of protection Intrinsic Safety Ex ia IIC Only for connection to the intrinsically safe signal circuit of a VEGA interface converter VEGACONNECT (PTB 01 ATEX 2007, PTB 07 ATEX 2013 X).
Control and display module circuit (spring contacts in the electronic compartment)	type of protection Intrinsic Safety Ex ia IIC Only for connection to the VEGA control and display module (PLICSCOM).

In the versions with the barriers KLEMP2-2LPAD and KLEMP2-2LHD the intrinsically safe signal circuits of the radar sensors VEGAPULS PS6*.*** are galvanically isolated from the supply circuit up to a peak value of the nominal voltage of 375 V.

In the remaining versions of the radar sensors VEGAPULS PS6*.*** the intrinsically safe signal circuits are earthed and connected with the external and internal earthing clip.

Physikalisch-Technische Bundesanstalt

Braunschweig und Berlin

4. SUPPLEMENT TO EC-TYPE-EXAMINATION CERTIFICATE PTB 03 ATEX 2163 X

All other specifications remain without changes.

Test report: PTB Ex 08-28058

Zertifizierungsstelle Explosionsschutz
By order:

Braunschweig, April 25, 2008

Dr.-Ing. U. Johannsmeier
Direktor und Professor

Physikalisch-Technische Bundesanstalt

Braunschweig und Berlin

5. SUPPLEMENT

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

to EC-TYPE-EXAMINATION CERTIFICATE PTB 03 ATEX 2163 X

(Translation)

Equipment: Radar sensors type series VEGAPULS PS6*.D(*)****D/E/K/L/H/P/F/V****

Marking:  **II 1/2G, 2G Ex d ia IIC T6...T1**

Manufacturer: VEGA Grieshaber KG

Address: Am Hohenstein 113, 77761 Schiltach, Deutschland

Description of supplements and modifications

The name of the radar sensors VEGAPULS type series VEGAPULS PS6*.D(*)****D/H**** is changed into radar sensors type series VEGAPULS PS6*(*).D(*)****D/H****. In future the radar sensors type series VEGAPULS PS6*.D(*)****E/K/L/P/F/V**** and VEGAPULS PS6*(*).D(*)****D/H**** are made and operated according to the test documents listed under item 3.

Type list:
VEGAPULS PS61.D****E/K/L/P/F/V****
VEGAPULS PS62.D*****E/K/L/P/F/V****
VEGAPULS PS63.D****E/K/L/P/F/V****
VEGAPULS PS65.D****P/F/V****
VEGAPULS PS66.D*****P/F/V****

VEGAPULS PS61(*).D****D/H****
VEGAPULS PS62(*).D*****D/H****
VEGAPULS PS63(*).D****D/H****
VEGAPULS PS65(*).D****H****
VEGAPULS PS66(*).D*****H****

Further changes concern the internal and external construction (using the EC-Type-Examination Certificate TÜV 09 ATEX 555501U ("Ex d" connection chamber with using the barriers type series P3-2LH, P2-4LH, KLEMP2-PA/FFD), new electronic inserts for the type series VEGAPULS PS6*(*).D(*)****D/H**** and modification of the antennas), the electrical data, temperature tables and 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.

5. SUPPLEMENT TO EC-TYPE-EXAMINATION CERTIFICATE PTB 03 ATEX 2163 X

VEGAPULS PS6*(*).D(*)**D/H**** with barrier P3-2LH**

Category-1/2 equipment

temperature class	temperature at the sensor	ambient temperature for the electronic system
T6	-20 ... +60 °C	-40 ... +50 °C
T5, T4, T3, T2, T1	-20 ... +60 °C	-40 ... +60 °C

For applications requiring category-1/2 equipment, the media process pressure has to be between 0.8 bar and 1.1 bar.

If the sensors of the VEGAPULS PS6*(*).D(*)****D/H**** are operated with higher temperatures than indicated in the table above, it shall be guaranteed by suitable measures that no ignition hazard is caused by 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	-60 ... + 85 °C	-40 ... +50 °C
T5	-60 ... +100 °C	-40 ... +60 °C
T4	-60 ... +135 °C	-40 ... +60 °C
T3	-60 ... +200 °C	-40 ... +60 °C
T2	-60 ... +300 °C	-40 ... +60 °C
T1	-60 ... +450 °C	-40 ... +60 °C

If the sensors of the VEGAPULS PS6*(*).D(*)****D/H**** are operated with higher temperatures than indicated in the table above, it shall be guaranteed by suitable measures that no ignition hazard is caused by 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.

5. SUPPLEMENT TO EC-TYPE-EXAMINATION CERTIFICATE PTB 03 ATEX 2163 X

Radar sensors type series VEGAPULS PS63(*).D**D/H**** (Version for operating at process temperatures to -170 °C)**

Category-2 equipment

temperature class	temperature at the sensor	ambient temperature for the electronic system
T6	-170 ... + 85 °C	-40 ... +50 °C
T5	-170 ... +100 °C	-40 ... +60 °C
T4	-170 ... +135 °C	-40 ... +60 °C
T3, T2, T1	-170 ... +200 °C	-40 ... +60 °C

If the sensors of the VEGAPULS PS63(*).D****D/H**** are operated with higher temperatures than indicated in the table above, it shall be guaranteed by suitable measures that no ignition hazard is caused by 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.

Radar sensors type series VEGAPULS PS62(*).D***D/H**** (Version for operating at process temperatures to -170 °C)**

Category-2 equipment

temperature class	temperature at the sensor	ambient temperature for the electronic system
T6	-170 ... + 85 °C	-40 ... +50 °C
T5	-170 ... +100 °C	-40 ... +60 °C
T4	-170 ... +135 °C	-40 ... +60 °C
T3	-170 ... +200 °C	-40 ... +60 °C
T2	-170 ... +300 °C	-40 ... +60 °C
T1	-170 ... +450 °C	-40 ... +60 °C

If the sensors of the VEGAPULS PS62(*).D*****D/H**** are operated with higher temperatures than indicated in the table above, it shall be guaranteed by suitable measures that no ignition hazard is caused by 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.

5. SUPPLEMENT TO EC-TYPE-EXAMINATION CERTIFICATE PTB 03 ATEX 2163 X

VEGAPULS PS6*.D(*)**V**** with barrier P2-4LH

Category-1/2 equipment

temperature class	temperature at the sensor	ambient temperature for the electronic system
T6	-20 ... +60 °C	-40 ... +55 °C
T5, T4, T3, T2, T1	-20 ... +60 °C	-40 ... +60 °C

For applications requiring category-1/2 equipment, the media process pressure has to be between 0.8 bar and 1.1 bar.

If the sensors of the VEGAPULS PS6*.D(*)****V**** are operated with higher temperatures than indicated in the table above, it shall be guaranteed by suitable measures 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	-60 ... + 85 °C	-40 ... +55 °C
T5	-60 ... +100 °C	-40 ... +60 °C
T4	-60 ... +135 °C	-40 ... +60 °C
T3	-60 ... +200 °C	-40 ... +60 °C
T2	-60 ... +300 °C	-40 ... +60 °C
T1	-60 ... +400 °C	-40 ... +60 °C

If the sensors of the VEGAPULS PS6*.D(*)****V**** are operated with higher temperatures than indicated in the table above, it shall be guaranteed by suitable measures that no ignition hazard is caused by 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.

5. SUPPLEMENT TO EC-TYPE-EXAMINATION CERTIFICATE PTB 03 ATEX 2163 X

Radar sensors type series VEGAPULS PS63.D**V**** (Version for operating at process temperatures to -170 °C)**

Category-2 equipment

temperature class	temperature at the sensor	ambient temperature for the electronic system
T6	-170 ... + 85 °C	-40 ... +55 °C
T5	-170 ... +100 °C	-40 ... +60 °C
T4	-170 ... +135 °C	-40 ... +60 °C
T3, T2, T1	-170 ... +150 °C	-40 ... +60 °C

If the sensors of the VEGAPULS PS63.D****V**** are operated with higher temperatures than indicated in the table above, it shall be guaranteed by suitable measures that no ignition hazard is caused by 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.

VEGAPULS PS61/62/63.D(*)**E****** with barrier P2-4LH

Category-1/2 equipment

temperature class	temperature at the sensor	ambient temperature for the electronic system
T5	-20 ... +60 °C	-40 ... +45 °C
T4, T3, T2, T1	-20 ... +60 °C	-40 ... +60 °C

For applications requiring category-1/2 equipment, the media process pressure has to be between 0.8 bar and 1.1 bar.

If the sensors of the VEGAPULS PS61/62/63.D(*)****E**** are operated with higher temperatures than indicated in the table above, it shall be guaranteed by suitable measures 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
T5	-60 ... +100 °C	-40 ... +45 °C
T4	-60 ... +135 °C	-40 ... +60 °C
T3, T2, T1	-60 ... +200 °C	-40 ... +60 °C

If the sensors of the VEGAPULS PS61/62/63.D(*)****E**** are operated with higher temperatures than indicated in the table above, it shall be guaranteed by suitable measures that no ignition hazard is caused by 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.

Radar sensors type series VEGAPULS PS63.D**E**** (Version for operating at process temperatures to -170 °C)**

Category-2 equipment

temperature class	temperature at the sensor	ambient temperature for the electronic system
T5	-170 ... +100 °C	-40 ... +45 °C
T4	-170 ... +135 °C	-40 ... +60 °C
T3, T2, T1	-170 ... +150 °C	-40 ... +60 °C

If the sensors of the VEGAPULS PS63.D****E**** are operated with higher temperatures than indicated in the table above, it shall be guaranteed by suitable measures that no ignition hazard is caused by 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.

VEGAPULS PS6*.D(*)**P/F**** with barrier KLEMP2-2LPA/FFD**

Category-1/2 equipment

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

For applications requiring category-1/2 equipment, the media process pressure has to be between 0.8 bar and 1.1 bar.

If the sensors of the VEGAPULS PS6*.D(*)****P/F**** are operated with higher temperatures than indicated in the table above, it shall be guaranteed by suitable measures that no ignition hazard is caused by 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	-60 ... + 85 °C	-40 ... +47 °C
T5	-60 ... +100 °C	-40 ... +60 °C
T4	-60 ... +135 °C	-40 ... +60 °C
T3	-60 ... +200 °C	-40 ... +60 °C
T2	-60 ... +300 °C	-40 ... +60 °C
T1	-60 ... +400 °C	-40 ... +60 °C

If the sensors of the VEGAPULS PS6*.D(*)****P/F**** are operated with higher temperatures than indicated in the table above, it shall be guaranteed by suitable measures that no ignition hazard is caused by 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.

Radar sensors type series VEGAPULS PS63.D**P/F**** (Version for operating at process temperatures to -170 °C)**

Category-2 equipment

temperature class	temperature at the sensor	ambient temperature for the electronic system
T6	-170 ... + 85 °C	-40 ... +47 °C
T5	-170 ... +100 °C	-40 ... +60 °C
T4	-170 ... +135 °C	-40 ... +60 °C
T3, T2, T1	-170 ... +150 °C	-40 ... +60 °C

If the sensors of the VEGAPULS PS63.D****P/F**** are operated with higher temperatures than indicated in the table above, it shall be guaranteed by suitable measures that no ignition hazard is caused by 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.

VEGAPULS PS61/62/63.D(*)**K/L**** with barrier KLEMP2-2LPA/FFD

Category-1/2 equipment

temperature class	temperature at the sensor	ambient temperature for the electronic system
T5	-20 ... +60 °C	-40 ... +45 °C
T4, T3, T2, T1	-20 ... +60 °C	-40 ... +60 °C

For applications requiring category-1/2 equipment, the media process pressure has to be between 0.8 bar and 1.1 bar.

If the sensors of the VEGAPULS PS61/62/63.D(*)****K/L**** are operated with higher temperatures than indicated in the table above, it shall be guaranteed by suitable measures that no ignition hazard is caused by 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
T5	-60 ... +100 °C	-40 ... +45 °C
T4	-60 ... +135 °C	-40 ... +60 °C
T3, T2, T1	-60 ... +200 °C	-40 ... +60 °C

If the sensors of the VEGAPULS PS61/62/63.D(*)****K/L**** are operated with higher temperatures than indicated in the table above, it shall be guaranteed by suitable measures that no ignition hazard is caused by 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.

Radar sensors type series VEGAPULS PS63.D**K/L**** (Version for operating at process temperatures to -170 °C)**

Category-2 equipment

temperature class	temperature at the sensor	ambient temperature for the electronic system
T5	-170 ... +100 °C	-40 ... +45 °C
T4	-170 ... +135 °C	-40 ... +60 °C
T3, T2, T1	-170 ... +150 °C	-40 ... +60 °C

If the sensors of the VEGAPULS PS63.D****K/L**** are operated with higher temperatures than indicated in the table above, it shall be guaranteed by suitable measures that no ignition hazard is caused by 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 circuit (terminals Kl1 [+], Kl2 [-] in the “d”-terminal compartment)	**VEGAPULS PS6*(*).D(*)****H****** **VEGAPULS PS61/62/63(*).D(*)****D****** U = 14 V ... 36 V DC U_m = 253 V AC
Supply circuit (terminals Kl1 [+], Kl2 [-] in the “d”-terminal compartment)	**VEGAPULS PS*.D(*)****P/F****** **VEGAPULS PS61/62/63.D(*)****K/L****** U = 16 V ... 36 V DC U_m = 253 V AC
Supply circuit (terminals Kl1 [+], Kl2 [-] in the “d”-terminal compartment)	**VEGAPULS PS6*.D(*)****V****** **VEGAPULS PS61/62/63.D(*)****E****** U = 20 V ... 253 V AC U_m = 253 V AC
Signal-circuit (terminals KL4 [+], KL5 [-] in the “d”-terminal compartment)	I = 4 ... 20 mA with superimposed HART Signal U_m = 253 V AC
	VEGAPULS PS6*(*).D(*)**D/H******
Control and display circuit (terminals 5,6,7,8 in the "i" connection compartment)	type of protection Intrinsic Safety Ex ia IIC Only for connection to the intrinsically safe supply and signal circuit of the external VEGADIS61 (PTB 02 ATEX 2136). The rules for interconnection of intrinsically safe circuits between the radar sensors VEGAPULS PS6*(*).D(*)*** and the external VEGADIS61 display unit are complied with if the total inductance and capacitance of the connecting line between the radar sensors VEGAPULS

	PS6*(*).D(*)*** and VEGADIS61 (L_{cable} = 310 µH and C_{cable} = 2 µF) is not exceeded. A control and display module installed in the VEGAPULS type series PS6*(*). D(*)*** and a connected VEGACONNECT have been considered. By using of the provided VEGA connecting cable between VEGAPULS PS6*(*).D(*)*** and the external display unit VEGADIS61 the following cable inductance and cable capacitance are taken into consideration from a length > 50 m: L_i' = 0,62 µH/m $C_{i\ core/core}'$ = 132 pF/m $C_{i\ core/screen}'$ = 208 pF/m $C_{i\ screen/screen}'$ = 192 pF/m
Control and display module circuit (spring contacts in the "i" connection compartment	type of protection Intrinsic Safety Ex ia IIC Only for connection to the VEGA control and display module PLICSCOM or CONNECT4 (PTB 07 ATEX 2013 X).
	VEGAPULS PS6*.D(*)**E/K/L/P/F/V****
Control and display circuit (terminals 5,6,7,8 in the "i" connection compartment)	type of protection Intrinsic Safety Ex ia IIC Only for connection to the intrinsically safe supply and signal circuit of the external VEGADIS61 (PTB 02 ATEX 2136). The rules for interconnection of intrinsically safe circuits between the radar sensors VEGAPULS PS6*.D(*)*** and the external VEGADIS61 display unit are complied with if the total inductance and capacitance of the connecting line between the radar sensors VEGAPULS PS6*.D(*)*** and VEGADIS61 (L_{cable} = 100 µH and C_{cable} = 2.8 µF) is not exceeded. A control and display module installed in the radar sensors VEGAPULS PS6*.D(*)*** and a connected VEGACONNECT have been considered. By using of the provided VEGA connecting cable between the radar sensors VEGAPULS PS6*.D(*)*** and the external display unit VEGADIS61 the following cable inductance

	and cable capacitance are taken into consideration from a length > 50 m: L_i' = 0,62 µH/m $C_{i\ core/core}'$ = 132 pF/m $C_{i\ core/screen}'$ = 208 pF/m $C_{i\ screen/screen}'$ = 192 pF/m
Communication circuit (I²C-bus socket in the "i" connection compartment)	type of protection Intrinsic Safety Ex ia IIC Only for connection to the intrinsically safe signal circuit of a VEGA interface converter VEGACONNECT (PTB 01 ATEX 2007, PTB 07 ATEX 2013 X).
Control and display module circuit (spring contacts in the "i" connection compartment)	type of protection Intrinsic Safety Ex ia IIC Only for connection to the VEGA control and display module PLICSCOM.

In the versions with barrier P3-2LH the intrinsically safe signal circuits of the radar sensors VEGAPULS PS6*(*).D$^{(*)}$****D/H**** are galvanically isolated from the supply circuit up to a peak value of the nominal voltage of 375 V.

In the remaining versions of the radar sensors VEGAPULS PS6*.D$^{(*)}$****K/L/P/F/E/V**** the intrinsically safe circuits are earthed and connected to the external and internal earthing terminal.

All other specifications remain without changes.

Special conditions

1. The radar sensors type series VEGAPULS PS6*.D*** und VEGAPULS PS6*(*).D*** 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 radar sensors with metal enclosure with display window, with parts of enclosures out of plastic as well as sensors include surfaces that can become charged electrostatically (note warning label).
3. The radar sensors in the versions with standpipe or antenna extension shall be installed in such a way that contact between the antenna and the tank wall will be excluded with sufficient safety, considering the tank installations and the flow conditions inside the tank.

Physikalisch-Technische Bundesanstalt

Braunschweig und Berlin

5. SUPPLEMENT TO EC-TYPE-EXAMINATION CERTIFICATE PTB 03 ATEX 2163 X

4. When used as category-1/2 equipment, the level measuring instruments shall be connected to the equipotential bonding conductor (contact resistance ≤ 1MΩ) (e.g. using the earthing terminal) in order to prevent metal elements from being charged electrostatically.
5. For applications where equipment of category 1/2 is required, all parts of the radar sensors which are in contact with the medium must only be used in such media, against which they are sufficiently resistant.
6. With the radar sensors in the execution with ball valve it is to be made certain that the ball valve is locked before the separation of the flange connection.
7. With the radar sensors in the version with flushing connector it is to be made certain that the degree of protection IP 67 at the connection to the check valve is guaranteed. After removing the check valve or the flushing system at the check valve, the opening with a suitable plug is to be locked in such a way, that the degree of protection IP 67 is kept.
8. The flameproof terminal compartment with integrated electronics shall be connected by means of suitable cable entries and conduit systems, which meet the requirements of in EN 60079-1, sections 13.1 and 13.2, and for which a separate examination certificate has been issued.
9. The connecting cables, the cable entries and sealing plugs or conduit-sealing devices must be suitable for the lowest ambient temperature.
10. Cable entries (conduit threads) and sealing plugs of simple design shall not be used. Should the flameproof terminal compartment with integrated electronics be connected by means of a conduit entry which has been approved for this purpose, the required sealing device shall be provided directly at the housing.
11. Non-used openings shall be sealed according to EN 60079-1, section 11.9.
12. The connecting line of the flameproof terminal compartment with integrated electronic shall be installed to provide for permanent wiring and sufficient protection against mechanical damage.
13. The terminal for the equipotential bonding of the flameproof terminal compartment is to be connected with the local equipotential bonding of the hazardous area.

Applied standards

EN 60079-0:2006, EN 60079-1:2004, EN 60079-11:2007, EN 60079-26:2007

Assessment and test report: PTB Ex 09-29355

Zertifizierungssektor Explosionsschutz
By order:

Braunschweig, November 19, 2009

Dr.-Ing. U. Johannsmeyer
Direktor und Professor