

### INTERNATIONAL ELECTROTECHNICAL COMMISSION IEC Certification Scheme for Explosive Atmospheres

for rules and details of the IECEx Scheme visit www.iecex.com

Certificate No.:

Date of Issue:

IECEx TUN 05.0018X

issue No.:5

Status:

Current

2017-07-31

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Certificate history:

Issue No. 5 (2017-7-31) Issue No. 4 (2008-10-17)

Issue No. 3 (2008-10-17) Issue No. 2 (2007-11-22) Issue No. 1 (2006-12-13)

Applicant:

VEGA Grieshaber KG Am Hohenstein 13 77761 Schiltach Germany

Equipment:

Optional accessory:

Capacitive continuous level measurement sensors type VEGACAL CL6\*.DI \*\*\*H/P/F\*\*\*\*

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Type of Protection:

Flameproof Enclosures and Intrinsic Safety

Marking:

Ex ia/db ia IIC T6 ... T1 Ga/Gb Ex db ia IIC T6 ... T1 Gb

Approved for issue on behalf of the IECEx

Certification Body:

Andreas Meyer

Position:

Signature: (for printed version)

Date:

Head of IECEx CB

2017-07-31

1. This certificate and schedule may only be reproduced in full.

2. This certificate is not transferable and remains the property of the issuing body.

3. The Status and authenticity of this certificate may be verified by visiting the Official IECEx Website.

Certificate issued by:

TÜV NORD CERT GmbH Hanover Office Am TÜV 1, 30519 Hannover Germany







Certificate No.:

IECEx TUN 05.0018X

Date of Issue:

2017-07-31

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Manufacturer:

VEGA Grieshaber KG Am Hohenstein 13 77761 Schiltach Germany

Additional Manufacturing location(s):

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

### STANDARDS:

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

IEC 60079-0: 2011

Explosive atmospheres - Part 0: General requirements

Edition: 6.0

IEC 60079-1: 2014-06

Explosive atmospheres - Part 1: Equipment protection by flameproof enclosures "d"

Edition: 7.0

IEC 60079-11: 2011

Explosive atmospheres - Part 11: Equipment protection by intrinsic safety "i"

Edition: 6.0

IEC 60079-26: 2014-

10

Explosive atmospheres - Part 26: Equipment with Equipment Protection Level (EPL) Ga

Edition: 3.0

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

### **TEST & ASSESSMENT REPORTS:**

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

IECEX ATR:

DE/TUN/ExTR08.0035/01

**IECEX QAR:** 

DE/TUN/QAR06.0002/07

File Reference:

17 217 204727

16 216 178638



Certificate No.:

IECEx TUN 05.0018X

Date of Issue:

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Schedule

#### EQUIPMENT:

Equipment and systems covered by this certificate are as follows:

The capacitive continuous level measurement sensors type VEGACAL CL6\*.DI \*\*\*H/P/F\*\*\*\* are used for monitoring or control of filling levels in explosion hazardous areas.

The measuring media are allowed to be combustible liquids, gases, mists or vapours.

The capacitive continuous level measurement sensors type VEGACAL CL8\*.DI \*\*\*H/P/F\*\*\*\* consist of an electronic housing for the barriers with an Ex-d connection room, an Ex-i connection room with inserted measuring electronics, a process adapting element and a measuring sensor.

#### Mechanical basic execution of the electrodes:

Type

Electrodes

VEGACAL CL62

partly insulated rod electrode, optionally with screening tube or concentric tube

VEGACAL CL63

fully insulated rod electrode, optionally plated

VEGACAL CL64

fully insulated rod electrode for viscous and adhesive filling materials

VEGACAL CL65

partly insulated cable electrode optionally with abrasion protection fully insulated cable electrode

VEGACAL CL66 fully in For further details see attachment.

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

1.At the plastic parts of the capacitive continuous level measurement sensors there is a danger of ignition by electrostatic discharge. Observe manual of the manufacturer and warning label.

2.For zone 0/1 applications and at risks by pendulum or vibration the respective parts of the capacitive continuous level measurement sensors have to be secured effectively against these dangers. Observe manual of the manufacturer.

3.For zone 0/1 applications, at the metallic electrode parts of the capacitive continuous level measurement sensors made of light metal there is a danger of ignition by impact or friction. Observe manual of the manufacturer.

4. For zone 0/1 applications the medium tangent materials have to be resistant to the media.

5.The flameproof terminal box (Ex-d connection room) of this equipment must be provided with cable entries and filler plugs resp. conduits which are certified according to IEC 60079-0 and IEC 60079-1.

6.The PA terminal of the capacitive continuous level measurement sensors with the barriers P2-2LH and KLEMP2-2LPAFFD (internal or external screw terminal) has to be connected with the potential equalization of the explosion hazardous area.



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EQUIPMENT(continued):

See attachment.



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

- -Standard update to IEC 60079-11 and IEC 60079-26
- -Data from CoC TUN 05.0018 X (version "H") also valid for CoC TUN 05.0019 X (version "P/F")
- -actual PLICSCOM module permissible to be installed; CoC TUN 16.0002 U
- -new thermal data
- -Ex-d-housing and installed barriers certfied according to CoC TUN 05.0015U, issue 08



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Additional information:

See attachment.

Annex: Attachment\_VEGACAL\_H\_P\_F\_d ia\_TUN05.0018X.pdf



### Page 1 of 6 Attachment to IECEx TUN 05.0018 X issue 05

The capacitive continuous level measurement sensors type VEGACAL CL6\*.DI \*\*\*H/P/F\*\*\*\* are used for monitoring or control of filling levels in explosion hazardous areas.

The measuring media are allowed to be combustible liquids, gases, mists or vapours. The capacitive continuous level measurement sensors type VEGACAL CL6\*.DI \*\*\*H/P/F\*\*\*\* consist of an electronic housing for the barriers with an Ex-d connection room, an Ex-i connection room with inserted measuring electronics, a process adapting element and a measuring sensor.

### Mechanical basic execution of the electrodes:

Туре	Electrodes
VEGACAL CL62	partly insulated rod electrode, optionally with screening tube or concentric tube
VEGACAL CL63	fully insulated rod electrode, optionally plated
VEGACAL CL64	fully insulated rod electrode for viscous and adhesive filling materials
VEGACAL CL65	partly insulated cable electrode optionally with abrasion protection
VEGACAL CL66	fully insulated cable electrode

Electrical data	
Type VEGACAL CL6*.DI ***H**** Supply and signal circuit (Terminals 1[+], 2[-] in the Ex-d connection room)	with barrier P3-2LH: U = 14 36 V d. c. U <sub>m</sub> = 253 V a. c.
	with barrier P2-2LH: U = 20 36 V d. c. Um = 253 V a. c.
Operation and indication circuit	in type of protection "Intrinsic Safety" Ex ia IIC
(Terminals 5, 6, 7, 8 or plug connection in the "i" connection room)	only for connection to the intrinsically safe circuit of the belonging external VEGA indication unit type VEGADIS61/81   The interconnection of the both intrinsically safe circuits was taken into account.   maximum values of the connection cable: $C_o = 2.4  \mu F$ $L_o = 160  \mu H$
Operation and indication module circuit (Spring contacts in the housing for the electronics)	in type of protection "Intrinsic Safety" Ex ia IIC only for connection to the VEGA operation and indication module (PLICSCOM)
Communication circuit(I <sup>2</sup> C bus in the "i" connection room))	in type of protection "Intrinsic Safety" Ex ia IIC only for connection to the intrinsically safe signal circuit of the VEGA interface converter type VEGACONNECT



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lf

- the VEGA interface converter type VEGACONNECT and
- the external VEGA indication unit type VEGADIS61/81

are connected, the following maximum values of the connection cable to the VEGADIS61/81 do result:

$$C_o = 2.8 \mu F$$
  
 $L_o = 100 \mu H$ 

A length of the triax cable resp. coax cable between the housing for the electronics and the terminal housing of 10 m is permissible.

All intrinsically safe circuits of the capacitive continuous level measurement sensors with built-in barrier P3-2LH are safe galvanically separated from the non intrinsically safe supply and signal circuit and the parts which can be earthed.

All intrinsically safe circuits of the capacitive measuring probes with built-in barrier P2-2LH are galvanically connected with the earth potential (measuring circuit excluded).

### Type VEGACAL CL6\*.DI \*\*\*P/F\*\*\*\*

### Electrical data

> with barrier KLEMP2-2LPAFFD: U = 16 ... 32 V d. c. Um = 253 V a. c.

Operation and indication circuit .... (Terminals 5, 6, 7, 8 in the "Ex i"-connection room)

in type of protection "Intrinsic Safety "Ex ia IIC only for connection to the intrinsically safe circuit of the belonging external VEGA indication unit type VEGADIS61/81

The interconnection of the both intrinsically safe circuits was taken into account.

maximum values of the connection cable:

 $C_o = 2.4 \mu F$  $L_o = 160 \mu H$ 

Operation and indication module circuit .....

(Spring contacts in the "Ex i"- only for

connection room)

in type of protection "Intrinsic Safety" Ex ia IIC only for connection to the VEGA operation and indication

module (PLICSCOM)

Communication circuit .....(I<sup>2</sup>C bus in the "Ex i"-connection room)

in type of protection "Intrinsic Safety" Ex ia IIC

only for connection to the intrinsically safe signal circuit of the



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VEGA interface converter type VEGACONNECT

If

- the VEGA interface converter type VEGACONNECT and
- the external VEGA indication unit type VEGADIS61/81 are connected, the following maximum values of the connection cable to the VEGADIS61/81 do result:

$$C_o = 2.8 \mu F$$
  
 $L_o = 100 \mu H$ 

A length of the triax cable resp. coax cable between the housing for the electronics and the terminal housing of 10 m is permissible.

All intrinsically safe circuits of the capacitive continuous level measurement sensors with built-in barrier P3-2LPAFF and P3-2LH are safe galvanically separated from the non intrinsically safe supply and signal circuit and the parts which can be earthed.

All intrinsically safe circuits of the capacitive measuring probes with built-in barrier KLEMP2-2LPAFFD and P2-2LH are galvanically connected with the earth potential (measuring circuit excluded).

### Thermal data

### Type VEGACAL CL6\*.DI \*\*\*H\*\*\*\*

If the capacitive continuous level measurement sensors are mounted in the partition wall between explosion hazardous areas which require apparatus of the <u>category 1 (electrode) and category 2 (electronics)</u>, the permissible temperature range in the area of the electronics/of the medium dependent on the temperature class has to be taken from the following table:

Temperature class	Ambient temperature range	Medium temperature range at measuring sensor
T6	-40 ℃ +46 ℃	
T5		
T4		-20 °C+60 °C
Т3	-40 ℃+60 ℃	-20 C+00 C
T2		
T1		

The electrodes of the capacitive continuous level measurement sensors are allowed to be operated in an explosion hazardous area, that requires apparatus of the category 1, only if atmospheric conditions exist (pressure from 0.8 bar to 1.1 bar).

If no explosion hazardous atmospheres exist, the permissible operating temperatures and pressures have to be taken from the manufacturer's data (manual).

If the sensors of the capacitive continuous level measurement sensors are operated at higher medium temperatures as listed in the a.m. table, measures have to be taken, that the danger of



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ignition caused by these hot surfaces is excluded. The max. permissible temperature on the electronics/housing must not exceed the values as mentioned in the a.m. table.

If the capacitive continuous level measurement sensors are mounted in explosion hazardous areas which require apparatus of the <u>category 2</u> the permissible temperature range in the area of the electronics/of the medium dependent on the temperature class has to be taken from the following table:

		Medium temperatu	re range at measuring	sensor
Temperature	Ambient			PTFE insulation
class	temperature range	PE insulation	PTFE insulation	with temperature
				adapter
T6	-40 ℃ +46 ℃		-50 ℃ +85 ℃	-50 ℃ +85 ℃
T5			-50 ℃ +100 ℃	-50 ℃ +100 ℃
T4		-40 ℃ +80 ℃	-50 ℃ +135 ℃	-50 ℃ +135 ℃
T3	-40 ℃ +60 ℃	-40 C +60 C		
T2			-50 ℃ +150 ℃	-50 ℃ +200 ℃
T1				

If the sensors of the capacitive continuous level measurement sensors are operated at higher medium temperatures as listed in the a.m. table, measures have to be taken, that the danger of ignition caused by these hot surfaces is excluded. The max. permissible temperature on the electronics/housing must not exceed the values as mentioned in the a.m. table.

### Type VEGACAL CL6\*.DI \*\*\*P/F\*\*\*\*

If the capacitive continuous level measurement sensors are mounted in the partition wall between explosion hazardous areas which require apparatus of the <u>category 1 (electrode) and category 2 (electronics)</u>, the permissible temperature range in the area of the electronics/of the medium dependent on the temperature class has to be taken from the following table:

Temperature class	Ambient temperature range	Medium temperature range at measuring sensor
T6	-40 ℃ +38 ℃	
T5	-40 ℃+53 ℃	
T4		-20 ℃+60 ℃
Т3	-40 ℃+60 ℃	-20 C+60 C
T2	-40 C+60 C	
T1		

The electrodes of capacitive continuous level measurement sensors are allowed to be operated in an explosion hazardous area, that requires apparatus of the category 1, only if atmospheric conditions exist (pressure from 0.8 bar to 1.1 bar).

If no explosion hazardous atmospheres exist, the permissible operating temperatures and pressures have to be taken from the manufacturer's data (manual).



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If the sensors of the capacitive continuous level measurement sensors are operated at higher medium temperatures as listed in the a.m. table, measures have to be taken, that the danger of ignition caused by these hot surfaces is excluded. The max. permissible temperature on the electronics/housing must not exceed the values as mentioned in the a.m. table.

If the capacitive continuous level measurement sensors are mounted in explosion hazardous areas which require apparatus of the <u>category 2</u> the permissible temperature range in the area of the electronics/of the medium dependent on the temperature class has to be taken from the following table:

		Medium temperatur	re range at measuring	sensor
Temperature	Ambient			PTFE insulation
class	temperature range	PE insulation	PTFE insulation	with temperature
				adapter
T6	-40 ℃ +38 ℃		-50 ℃ +85 ℃	-50 ℃ +85 ℃
T5	-40 ℃ +53 ℃		-50 ℃ +100 ℃	-50 ℃ +100 ℃
T4		-40 ℃ +80 ℃	-50 ℃ +135 ℃	-50 ℃ +135 ℃
T3	-40 ℃+60 ℃	-40 C +60 C		
T2	-40 C+60 C		-50 ℃ +150 ℃	-50 ℃ +200 ℃
T1				

If the sensors of the capacitive continuous level measurement sensors are operated at higher medium temperatures as listed in the a.m. table, measures have to be taken, that the danger of ignition caused by these hot surfaces is excluded. The max. permissible temperature on the electronics/housing must not exceed the values as mentioned in the a.m. table.

### Specific Conditions of Use

- At the plastic parts of the capacitive continuous level measurement sensors there is a danger of ignition by electrostatic discharge. Observe manual of the manufacturer and warning label.
- 2. For zone 0/1 applications and at risks by pendulum or vibration the respective parts of the capacitive continuous level measurement sensors have to be secured effectively against these dangers. Observe manual of the manufacturer.
- For zone 0/1 applications, at the metallic electrode parts of the capacitive continuous level measurement sensors made of light metal there is a danger of ignition by impact or friction. Observe manual of the manufacturer.
- 4. For zone 0/1 applications the medium tangent materials have to be resistant to the media.
- The flameproof terminal box (Ex-d connection room) of this equipment must be provided with cable entries and filler plugs resp. conduits which are certified according to IEC 60079-0 and IEC 60079-1.



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6. The PA terminal of the capacitive continuous level measurement sensors with the barriers P2-2LH and KLEMP2-2LPAFFD (internal or external screw terminal) has to be connected with the potential equalization of the explosion hazardous area.

Since the intrinsically safe circuits are galvanically connected with the earth potential, potential compensation has to exist in the complete course of the erection of the intrinsically safe operation and indication circuit.



### INTERNATIONAL ELECTROTECHNICAL COMMISSION **IEC Certification Scheme for Explosive Atmospheres**

for rules and details of the IECEx Scheme visit www.iecex.com

Certif	ficate	No.	۰

IECEx TUN 05.0018X

issue No.:4

Status:

Current

Date of Issue:

2008-10-17

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Certificate history

Issue No. 4 (2008-10-17)

Issue No. 3 (2008-10-17)

Issue No. 2 (2007-11-

13)

Issue No. 1 (2006-12-

Applicant:

VEGA Grieshaber KG Am Hohenstein 13

77761 Schiltach

Germany

Electrical Apparatus:

Capacitive Measuring Probe type VEGACAL CL6\*.DI\*\*\*H\*\*\*\*

Optional accessory:

Type of Protection:

Flameproof Enclosures and Intrinsic Safety

Marking:

Zone 0/1 Ex d ia IIC T6

Approved for issue on behalf of the IECEx Certification Body:

Karl-Heinz Schwedt

Head of IECEx CB

Position:

Signature: (for printed version)

Date:

1. This certificate and schedule may only be reproduced in full.

2. This certificate is not transferable and remains the property of the issuing body.

3. The Status and authenticity of this certificate may be verified by visiting the Official IECEx Website.

Certificate issued by:

TÜV NORD CERT GmbH Hanover Office Am TÜV 1 30519 Hannover Germany





Certificate No : IECEx TUN 05.0018X

Date of Issue: 2008-10-17 Issue No.: 4

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VEGA Grieshaber KG Manufacturer:

Am Hohenstein 13 77761 Schiltach Germany

### Manufacturing location(s):

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

### STANDARDS:

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

Electrical apparatus for explosive gas atmospheres - Part 0: General requirements IEC 60079-0: 2004

Edition: 4.0

Edition: 1

IEC 60079-1: 2003 Electrical apparatus for explosive gas atmospheres - Part 1: Flameproof enclosure 'd'

Edition: 5

IEC 60079-11: 2006 Explosive atmospheres - Part 11: Equipment protection by intrinsic safety "i" Edition: 5

IEC 60079-26: 2004 Electrical apparatus for explosve gas atmospheres - Part 26: Construction, test and marking of Group II Zone 0 electrical apparatus

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

#### **TEST & ASSESSMENT REPORTS:**

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

IECEX ATR: DE/TUN/ExTR08.0035/00 File Reference: 08 204 554741



Certificate No.:

IECEx TUN 05.0018X

Date of Issue:

2008-10-17

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Schedule

### EQUIPMENT:

Equipment and systems covered by this certificate are as follows:

The capacitive measuring probes type VEGACAL CL6\*.DI\*\*HD\* are used for monitoring or control of filling levels in explosi The measuring media are allowed to be combustible liquids, gases, mists or vapours.

The measuring media are allowed to be combustible liquids, gases, mists or vapours.

The capacitive measuring probes type VEGACAL CL6\*.DI\*\*HD\* consist of an electronic housing for the barriers with an Ex-d connection room, an Ex-i connection room with inserted measuring electronics,

a process adapting element and a measuring sensor.

Mechanical execution of the capacitive measuring probes:

type	electrodes
CL62.DI**HD*	partly insulated electrode, optionally with screening tube or concentric tube
CL63.DI**HD*	fully insulated electrode, optionally plated
CL64.DI**HD*	fully insulated electrode, optionally with screening tube, concentric tube or plated
CL65.DI**HD*	partly insulated cable electrode optionally with additionally insulated cable
CL66.DI**HD*	fully insulated cable electrode

### CONDITIONS OF CERTIFICATION: YES as shown below:



		Control of the Contro	
Certificate No.:	IECEx TUN 05.0018X		
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QUIPMENT(continued):			
only changes regarding th	e formatting; see annexe		



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#### Additional information:

Only changes regarding the formatting; see annexe

Annexe: 3rd supplement\_COC\_VEGACAL CL6\_DI\_H.pdf, CoC IECEx TUN 05.0018X\_complete inclusive of Special Conditions.pdf



	ertification Scho	CTROTECHNICAL Comments for Explosive A	tmospheres
Certificate No.: Status: Date of Issue:	IECEx TUN 05.0018X  Cancelled  2008-10-17	issue No.:3	Certificate history: Issue No. 4 (2008-10- 17) Issue No. 3 (2008-10- 17) Issue No. 2 (2007-11- 22)
Applicant:	VEGA Grieshaber KG Am Hohenstein 13 77761 Schiltach Germany		Issue No. 1 (2006-12- 13)
Electrical Apparatus: Optional accessory:	Capacitive Measuring F	Probe type VEGACAL CL6*.DI**H	D*
Type of Protection:	Flameproof Enclosures	s and Intrinsic Safety	
Marking:	Ex d ia IIC T6		
Approved for issue on be Certification Body:	half of the IECEx	Karl-Heinz Schwedt	
Position:		Head of IECEx CB	
Signature: (for printed version)			
Date:			
This certificate and sct     This certificate is not tr     The Status and auther     Certificate issued by:	nedule may only be reprod ansferable and remains th ticity of this certificate may	uced in full. se property of the issuing body. y be verified by visiting the Official II	ECEx Website.
	NORD CERT GmbH Hanover Office Am TÜV 1 30519 Hannover		
	Germany		/ NORD
IFC TEČEK	·	ECEx Certif	icate
IEC TEĈEX	·		icate
	II	ECEx Certif of Conform	icate
Certificate No.: Date of Issue:	·	ECEx Certif of Conform	icate
Certificate No.:	IECEX TUN 05.0	ECEx Certif of Conform	icate nity
Certificate No.: Date of Issue:	IECEX TUN 05.0 2008-10-17 VEGA Gries Am Hohenstel 77761 Schillar Germany	ECEx Certif of Conform	icate nity
Certificate No.: Date of Issue:  Manufacturer:  Manufacturing location(s	IECEx TUN 05.0 2008-10-17  VEGA Gries Am Hohenstei 7775 Schart Germany	ECEx Certif of Conform	icate nity sue No.: 3 age 2 of 6
Certificate No.: Date of Issue:  Manufacturer:  Manufacturing location( This certificate is issued tools to comply include to the control to comply and to certificate is granted sub- as amended.  STANDARDS: The electrical apporatus	IECEX TUN 05.0 2008-19-17  VEGA Gries Am Hohenstein 7761 School first is among Germany  in: (IEC Standard ist before a , was assessed and foun ject to the conditions as a	DISCOUNT OF THE PROPERTY OF TH	icate nity  sue No.: 3 age 2 of 6  was assessed and tested and yeten, relating to the Ex products system requirements. This Ex 02 and Operational Documents
Certificate No.: Date of Issue:  Manufacturing location( This certificate is issued found to comply with the covered by the Co	IECEx TUN 05.0 2008-10-17  VEGA Gries Am Hohenstell 77751 Short Sh	DISCOUNT OF THE PROPERTY OF TH	icate nity  sue No.: 3 age 2 of 6  was assessed and tested and ystem, relating to the Ex products ystem requirements. This Ex 62 and Operational Documents of this certificate and the identified
Certificate No.: Date of Issue: Manufacturier: Manufacturier: This certificate is issued. This certificate is issued to constitute the summary of the certificate is granted subtass armended. STANDARDS: The electrical apparatus documents, was found the delicent. Au Electron 1.0 to 1	IECEX TUN 05.0 2008-19-17  VEGA Gries Am Holomatin Germany  i): as verification that a sample: (IEC Standard int before ac, was assessed and foun ject to the conditions as and any acceptable varied occupy) with the following Electrical apparatus i	ECEX Certiff of Conform  O18X  Is Proposed to the conform of the conformation of the conformatio	icate nity  sue No.: 3 age 2 of 6  was assessed and tested and system, relating to the Ex products system requirements. This Ex 02 and Operational Documents of this certificate and the identified at 0: General requirements
Manufacturer:  Manufacturing location( This creditests is issued  Manufacturing location( This creditests is issued to some of the control of the control to covered by this critical so covered by this critical to covered by the critical to as mended.  STANDARDS: The electrical apparatur  IEC 60079-0 : 2004  Edition: 40  IEC 60079-1 : 2003  IEC 60079-1 : 2003	IECEx TUN 05.0 2008-10-17  VEGA Gries Am Poblemain Toman IEC Standard list below IEC Standard list below per to the conditions as an and any acceptable variate Electrical apparatus t Electrical apparatus t Explosive atmospher	DISCOUNTY OF THE STATE OF THE S	icate nity  sue No.: 3 age 2 of 6  was assessed and tested and ystem, relating to the Ex products Ex 02 and Operational Documents of this certificate and the identified rt 0: General requirements rt 1: Flameproof enclosure 'd' by intrinsic safety "r"
Certificate No.: Date of Issue:  Manufacturing location( This certificate is issued focus to comply the certificate of the control to comply the certificate is a smended with the control to comply the certificate of the ce	IECEx TUN 05.0 2008-10-17  VEGA Gries Am Poblemain Toman IEC Standard list below IEC Standard list below per to the conditions as an and any acceptable variate Electrical apparatus t Electrical apparatus t Explosive atmospher	DISCOUNTY OF THE SECOND OF THE	icate nity  sue No.: 3 age 2 of 6  was assessed and tested and ystem, relating to the Ex products Ex 02 and Operational Documents of this certificate and the identified rt 0: General requirements rt 1: Flameproof enclosure 'd' by intrinsic safety "r"

File Reference: 08 204 554741

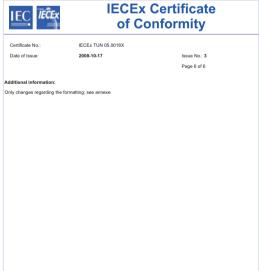
TEST & ASSESSMENT REPORTS:
A sample(s) of the equipment listed has successfully met the examination and test requirements as recorded in

IECEx ATR: DE/TUN/ExTR08.0035/00

IEC IECEX		x Certificate Conformity
Certificate No.:	IECEx TUN 05.0018X	
Date of Issue:	2008-10-17	Issue No.: 3
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		Schedule
EQUIPMENT: Equipment and systems co	overed by this certificate are as follows.	
a process adapting elemen	fully insulated electrode, optiona fully insulated electrode, optiona	hally with screening tube or concentric tube
CONDITIONS OF CERTIF	ICATION: YES as shown below:	

IEC TEĈEX		Certificate nformity	
Certificate No.:	IECEx TUN 05.0018X		
Date of Issue:	2008-10-17	Issue No.: 3	
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EQUIPMENT(continued):			
Only changes regarding th	e formatting; see annexe		







### **IECEx Certification Body**



### Page 1 of 3 Issue No. 3 of IECEx TUN 05.0018 X

IECEx TR:	File reference:
DE/TUN/ExTR08.0035/00	08 204 554741
IECEx QAR:	File reference:
DE/QAR/TUN/06.0002/00	QAR/TUN/QAR06.0002/00

The capacitive measuring probes type VEGACAL CL6\*.DI\*\*\*H\*\*\*\*\* are used for monitoring or control of filling levels in explosion hazardous areas.

The measuring media are allowed to be combustible liquids, gases, mists or vapours. The capacitive measuring probes type VEGACAL CL6\*.DI\*\*\*H\*\*\*\*\* consist of an electronic housing for the barrier with an Ex-d connection room, an Ex-i connection room with inserted measuring electronics, a process adapting element and a measuring sensor.

The changes refer to the type designation mentioned above, the mechanical construction, the temperature range in the area of the electronics/of the medium, the electrical data, the special conditions for safe use and the marking.

The marking reads as follows: Zone 0/1 Ex d ia IIC Tx (see tables for temperature ranges).

Type designation and mechanical execution of the measuring probes:

Туре	Electrodes
CL62.DI***H****	partly insulated electrode, optionally with screening tube or concentric tube
CL63.DI***H****	fully insulated electrode, optionally plated
CL64.DI***H****	fully insulated electrode, optionally with screening tube, concentric tube or plated
CL65.DI***H****	partly insulated cable electrode optionally with additionally insulated cable
CL66.DI***H****	fully insulated cable electrode
CL69.DI***H****	fully insulated 2-rod electrode

If the capacitive measuring probes are mounted in explosion hazardous areas of the zone 1, the permissible temperature range in the area of the electronics/of the medium dependent on the temperature class has to be taken from the following table:

Temperature	Ambient	Medium temperature	Medium temperature
class	temperature range	range	range for other
	on the	for electrodes with PE-	electrodes
	electronics/housing	insulation	
T6	- 40°C + 57°C	- 40°C + 80°C	-50°C +85 °C
T5	- 40°C + 60°C	- 40°C + 80°C	-50°C +100 °C
T4	- 40°C + 60°C	- 40°C + 80°C	-50°C +135 °C
T3*, T2*, T1*	- 40°C + 60°C	- 40°C + 80°C	-50°C +150 °C

<sup>\*</sup> with temperature adapter for medium temperatures > 150°C... 200°C

If the sensors of the capacitive measuring probes are operated at higher medium temperatures as listed in the a.m. table, measures have to be taken, that the danger of ignition caused by these hot surfaces is excluded. The max. permissible temperature on the electronics/housing must not exceed the values as mentioned in the a.m. table.

### TÜV NORD CERT GmbH Am TÜV 1 30519 Hannover





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If the capacitive measuring probes are mounted in the partition wall between explosion hazardous areas of the zone 0 (electrode) and zone 1 (electronics), the permissible temperature range in the area of the electronics/of the medium has to be taken from the following table:

Temperature class	Ambient temperature	Medium temperature
Temperature class	range	range
Т6	-40 °C +57 °C	-20°C +60 °C
T5 T1	-40 °C +60 °C	-20°C +60 °C

The electrodes of the capacitive measuring probes are allowed to be operated in an explosion hazardous area of the zone 0, only if atmospheric conditions exist (pressure from 0.8 bar to 1.1 bar).

If no explosion hazardous atmospheres exist, the permissible operating temperatures and pressures have to be taken from the manufacturer's data (manual).

If the sensors of the capacitive measuring probes are operated at higher medium temperatures as listed in the a.m. table, measures have to be taken, that the danger of ignition caused by these hot surfaces is excluded. The max. permissible temperature at the electronics/housing must not exceed the values as mentioned in the a.m. table.

### Electrical data Supply and signal circuit ...... U = 20 ... 36 V d. c. Um = 253 Va.c. (Terminals KI1/1, KI1/2: Ex-d connection room) PA terminal of the capacitive measuring probe with barrier P2-Connection to the potential equalisation in the 2LH ..... (Screw terminal) explosion hazardous area in type of protection "Intrinsic Safety" Ex ia IIC Operation and indication circuit ..... (Terminals 5, 6, 7, 8 in the "i"-connection room resp. plug connection) only for connection to the intrinsically safe circuit of the belonging external VEGA indication unit type VEGADIS61 (IECEx PTB 06.0048) The interconnection of the both intrinsically safe circuits was taken into account. maximum values of the connection cable: $Co = 2.4 \mu F$ $= 160 \mu H$ lο Operation and indication module circuit .... in type of protection "Intrinsic Safety" Ex ia IIC only for connection to the VEGA operation and (Spring contacts in the "i"-connection room) indication module (Plicscom) Communication circuit ..... in type of protection "Intrinsic Safety" Ex ia IIC (I<sup>2</sup>C bus in the "i"-connection room) only for connection to the intrinsically safe signal circuit of the VEGA interface converter type **VEGACONNECT**

### TÜV NORD CERT GmbH Am TÜV 1 30519 Hannover





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lf

- the VEGA interface converter type VEGACONNECT and
- the external VEGA indication unit type VEGADIS61 (IECEx PTB 06.0048)

are connected, the following maximum values of the connection cable to the VEGADIS61 do result:

$$C_o = 2.8 \mu F$$
  
 $L_o = 100 \mu H$ 

A length of the triax cable resp. coax cable between the housing for the electronics and the terminal housing of 10 m is permissible.

All intrinsically safe circuits of the capacitive measuring probe with built-in barrier P2-2LH are galvanically connected with the earth potential (measuring circuit excluded)

### Special conditions for safe use:

- At the plastic parts of the capacitive measuring probes type VEGACAL CP6\*.DI\*\*\*H\*\*\*\* there is a danger of ignition by electrostatic discharge. Observe manual of the manufacturer and warning label.
- For zone 0/1 applications and at risks by pendulum or vibration the respective parts of the
  capacitive measuring probes type VEGACAL CP65.DI\*\*\*H\*\*\*\* and type VEGACAL
  CP66.DI\*\*\*H\*\*\*\* have to be secured effectively against these dangers. Observe manual of the
  manufacturer.
- 3. For zone 0/1 applications, at the metallic electrode parts of the capacitive measuring probes type VEGACAL CP6\*.DI\*\*\*H\*\*\*\* made of light metal there is a danger of ignition by impact or friction. Observe manual of the manufacturer.
- 4. For zone 0/1 applications the medium tangent materials have to be resistant to the media.
- 5. The PA terminal of the capacitive measuring probes (internal or external screw terminal) has to be connected with the potential equalization of the explosion hazardous area.
- The flameproof terminal box (Ex-d connection room) of this equipment must be provided with cable entries and filler plugs resp. conduits which are certified according to IEC 60 079-0 and IEC 60 079-1.
- 7. The connection cables, the cable entries and filler plugs resp. the conduits have to be suitable for the lowest ambient temperature.



### INTERNATIONAL ELECTROTECHNICAL COMMISSION IEC Certification Scheme for Explosive Atmospheres

for rules and details of the IECEx Scheme visit www.iecex.com

Certificate No.:	IECEx TUN 05.00183	X issue No.:2	Certificate history
			Issue No. 2 (2007-11-22) Issue No. 1 (2006-12-13)
Status:	Current		13300 110 1 (2000 12 10)
Date of Issue:	2007-11-22	Page 1 of 6	
Applicant:	VEGA Grieshaber I Am Hohenstein 13 77761 Schiltach Germany	KG	
Electrical Apparatus: Optional accessory	Capacitive Measurin	g Probe type VEGACAL CL6*.DI**HD*	
Type of Protection:	Flameproof Enclosu	res and Intrinsic Safety	
Marking:	Ex d ia IIC T6		
Approved for issue on bet Certification Body:	nalf of the IECEx	Karl-Heinz Schwedt	
Position:		Head of IECEx CB	
Signature: (for printed version)		llwedt	
Date:		2007-11-6	22
2. This certificate is not tra	edule may only be reproduc ansferable and remains the plicity of this certificate may be		

Certificate issued by

TÜV NORD CERT GmbH & Co. KG Am TUV1 D-30519 Hannover Germany





Certificate No.: IECEx TUN 05.0018X

Date of Issue: 2007-11-22 Issue No.: 2

Page 2 of 6

VEGA Grieshaber KG Manufacturer.

Am Hohenstein 13 77761 Schiltach Germany

#### Manufacturing location(s):

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

#### STANDARDS:

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

Electrical apparatus for explosive gas atmospheres - Part 0; General requirements IEC 60079-0: 2004

IEC 60079-1: 2003

Electrical apparatus for explosive gas atmospheres - Part 1: Flameproof enclosure 'd'

Electrical apparatus for explosive gas atmospheres - Part 11: Intrinsic safety 'i'

IEC 60079-11: 1999

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

#### TEST & ASSESSMENT REPORTS:

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

File Reference DE/TUN/05/551830 05YEX551830 DE/TUN/05/552075-1 05YEX552075-1



Certificate No.: IECEx TUN 05.0018X

Date of Issue: 2007-11-22 Issue No : 2

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Schedule

#### EQUIPMENT:

Equipment and systems covered by this certificate are as follows:

The capacitive measuring probes type VEGACAL CL6\* DI\*\*HD\* are used for monitoring or control of filling levels in explosion hazardous areas.

The capacitive measuring proces type VESACAL Cto 'DI'" HD' are used for monitoring of control of mining levels. The measuring media are allowed to be combustible liquids, gases, mists or vapours. The capacitive measuring probes type VESACAL Cto 'DI" HD' consist of an electronic housing for the barriers with an Ex-d connection room, an Ex-l connection room with inserted measuring electronics, a process adapting element and a measuring sensor.

Mechanical execution of the capacitive measuring probes:			
type	electrodes		
CL62.DI**HD*	partly insulated electrode, optionally with screening tube or concentric tube		
CL63.DI**HD*	fully insulated electrode, optionally plated		
CL64.DI**HD*	fully insulated electrode, optionally with screening tube, concentric tube or plated		
CL65.DI**HD*	partly insulated cable electrode optionally with additionally insulated cable		
CL66.DI**HD*	fully insulated cable electrode		

#### CONDITIONS OF CERTIFICATION: YES as shown below:



Certificate No.: IECEx TUN 05.0018X

Date of Issue; 2007-11-22 Issue No.: 2

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COLUMNATION		
EQUIPMENT	continued)	ı:



Certificate No.: IECEx TUN 05.0018X

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



Certificate No.: IECEx TUN 05.0018X

Date of Issue: 2007-11-22 Issue No.: 2

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Additional information:

Only changes regarding the formatting; see annexe

Annexe: CoC IECEx TUN 05.0018X\_complete inclusive of Special Conditions.pdf, 1Erg\_COC\_CAL CL6- DI--HD-- pdf

### TÜV NORD CERT GmbH Am TÜV 1 30519 Hannover



### Testing Laboratory Explosion Protected Equipment and Monitoring Devices

### Page 1 of 2 Issue No. 2 of IECEx TUN 05.0018 X

The capacitive measuring probes type VEGACAL CL6\*.DI\*\*HD\* are used for monitoring or control of filling levels in explosion hazardous areas.

The measuring media are allowed to be combustible liquids, gases, mists or vapours.

The capacitive measuring probes type VEGACAL CL6\*.DI\*\*HD\* consist of an electronic housing for the barriers with an Ex-d connection room, an Ex-i connection room with inserted measuring electronics, a process adapting element and a measuring sensor.

Mechanical execution of the capacitive measuring probes:

type	electrodes
CL62.DI**HD*	partly insulated electrode, optionally with screening tube or concentric tube
CL63.DI**HD*	fully insulated electrode, optionally plated
CL64.DI**HD*	fully insulated electrode, optionally with screening tube, concentric tube or plated
CL65.DI**HD*	partly insulated cable electrode optionally with additionally insulated cable
CL66.DI**HD*	fully insulated cable electrode

The permissible temperature range in the area of the electronics/of the medium dependent on the temperature class has to be taken from the following table:

temperature class	ambient temperature range on the	medium temperature range for electrodes with PE/PA-	medium temperature range for other electrodes
	electronics/housing	insulation	
T6	- 40°C + 57°C	- 40°C + 80°C	-50°C +85 °C
T5	- 40°C + 60°C	- 40°C + 80°C	-50°C +100 °C
T4	- 40°C + 60°C	- 40°C + 80°C	-50°C +135 °C
T3*, T2*, T1*	- 40°C + 60°C	- 40°C + 80°C	-50°C +150 °C

<sup>\*</sup> with temperature adapter for medium temperatures > 150°C ... 200°C

If the sensors of the capacitive measuring probes are operated at higher medium temperatures as listed in the a.m. table, measures have to be taken, that the danger of ignition caused by these hot surfaces is excluded. The max. permissible temperature on the electronics/housing must not exceed the values as mentioned in the a.m. table.

### Electrical data

Supply and signal circuit  $\begin{array}{ccccc} U &=& 20 \dots 36 \ V \ d. \ c. \\ \text{(Terminals KI1/1, KI1/2;} & U_m &=& 253 & V \ a. \ c. \\ \end{array}$ 

Ex-d connection room)

PA terminal of the Connection to the potential equalisation in the explosion capacitive measuring probe with barrier hazardous area

P2-2LH

(Screw terminal)

Operation and indication circuit

(Terminals 5, 6, 7, 8 in the "i"-connection room resp., plug

connection)

in type of protection "Intrinsic Safety" Ex ia IIC only for connection to the intrinsically safe circuit of the belonging external VEGA indication unit type VEGADIS61 The interconnection of the both intrinsically safe circuits was taken into account.

maximum values of the connection cable:

Co = 2.4 μF Lo = 160 μH

### TÜV NORD CERT GmbH Am TÜV 1 30519 Hannover



### Testing Laboratory Explosion Protected Equipment and Monitoring Devices

### Page 2 of 2 Issue No. 2 of IECEx TUN 05.0018 X

Operation and indication module circuit

(Spring contacts in the "i"-connection

room)

in type of protection "Intrinsic Safety" Ex ia IIC

only for connection to the VEGA operation and indication module

(Plicscom)

Communication circuit

(I2C bus in the "i"-connection room)

in type of protection "Intrinsic Safety" Ex ia IIC

only for connection to the intrinsically safe signal circuit of the VEGA

interface converter type VEGACONNECT

The VEGA interface converter may only be operated together with the capacitive measuring probe, if no explosion hazardous atmosphere exists.

A length of the triax cable resp. coax cable between the housing for the electronics and the terminal housing of 10 m is permissible.

All intrinsically safe circuits of the capacitive measuring probes with built-in barrier KLEMP2-2LHD are safe galvanically separated from the non intrinsically safe supply and signal circuit and the parts which can be earthed. All intrinsically safe circuits of the capacitive measuring probe with built-in barrier P2-2LH are galvanically connected with the earth potential (measuring circuit excluded).

### Conditions of Certification

- At the plastic parts of the capacitive measuring probes type VEGACAL CL6\*.DI\*\*HD\* there is a danger of ignition by electrostatic discharge. Observe manual of the manufacturer and warning label.
- The flameproof terminal box (Ex-d connection room) of this equipment must be provided with cable entries and filler plugs resp. conduits which are certified according to IEC 60 079-0 and IEC 60 079-1.
- The connection cables, the cable entries and filler plugs resp. the conduits have to be suitable for the lowest ambient temperature.
- 4. The PA terminal of the capacitive measuring probes with the barrier P2-2LH (internal or external screw terminal) has to be connected with the potential equalization of the explosion hazardous area. Since the intrinsically safe circuits are galvanically connected with the earth potential, potential compensation has to exist in the complete course of the erection of the intrinsically safe operation and indication circuit.
- The intrinsically signal circuit of the barrier type KLEMP2-2LHD is safe galvanically separated from the non
  intrinsically safe supply and signal circuit up to a peak crest value of the voltage of 375 V.
   The intrinsically safe signal circuit of the barrier type P2-2LH is galvanically connected with the earth
  potential.



Edition: 4

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

IEST & ASSESSMENT REPURIS:

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

05YEX551830 05YEX552075-1

TEST & ASSESSMENT REPORTS:

IECEx ATR: DE/TUN/05/551830 DE/TUN/05/552075-1

http://iecex.iec.ch/iecex/iecexweb.nsf/certificatesAjax/IECEx%20TUN%2005.0018X... 15.11.5269 TEN-170731



Certificate No : Date of Issue:

IECE TUN 05 0018Y

2006-12-13

Issue No · 1

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Schedule

#### EQUIPMENT:

Equipment and systems covered by this certificate are as follows:

The capacitive measuring probes type VEGACAL CLS\* DI\*\*HD\* are used for monitoring or control of filling levels in explosic. The measuring media are allowed to be combustible liquids, gases, mists or vapours. The capacitive measuring probes type VEGACAL CLS\* DI\*\*HD\* consist of an electronic housing for the barriers with an Ex-correction com with inserted measuring electronics, a process adapting element and a measuring sensor.

	Mechanical execution of the cap	active measuring proces:	
	type	electrodes	
CL62.DI**HD* partly insulated electrode, optionally with screening tube or concentric tube			
	CL63.DI**HD*   fully insulated electrode, optionally plated		
CL64.DI**HD* fully insulated electrode, optionally with screening tube, concentric tube or pla			
	CL65.DI**HD*	partly insulated cable electrode optionally with additionally insulated cable	
	CL66.DI**HD*	fully insulated cable electrode	

#### CONDITIONS OF CERTIFICATION: YES as shown below:

- 1. At the plastic parts of the capacitive measuring probes type VEGACAL CL6\*.D1\*\*HD\* there is a danger of ig manual of the manufacturer and warning label.

  2. The flamsport ferminal box (Ex-do connection room) of this equipment must be provided with cable entries and filter plus (Ex-do connection room) of this equipment must be provided with cable entries and filter plugs reap, the conducts have to be suitable for the lowest ambient?

  3. The connection cables, the cubile entries and filter plugs reap, the conducts have to be suitable for the lowest ambient? the explosion hazardous area.

  5. The connection cables, the cubile entries and filter plugs reap, the conducts have to be suitable for the lowest ambient? Since the intrinsically safe circuits are galvanically connected with the earth potential, potential compensation has to exist in intrinsically safe provided by ginal circuit of the barrier type KLEMP2-2LHD is safe galvanically separated from the non intrinsically value intrinsically safe spraid circuit of the barrier type P2-2LH is galvanically connected with the earth potential.



#### **IECEx Certificate** of Conformity

IECEx TUN 05.0018X

Date of Issue: 2006-12-13

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#### EQUIPMENT(continued):

The permissible temperature range in the area of the electronics/of the medium dependent on the temperature class has to be taken from the following table:

temperature class		ambient temperature	medium temperature range	medium tempera
		range on the	for electrodes with PE/PA-	for other elec
		electronics/housing	insulation	
	T6	- 40°C + 57°C	- 40°C + 80°C	-50°C +8
	T5	- 40°C + 60°C	- 40°C + 80°C	-50°C +1
	T4	- 40°C + 60°C	- 40°C + 80°C	-50°C +1
	T3*, T2*, T1*	- 40°C + 60°C	- 40°C + 80°C	-50°C +1
	* with temperature ada	pter for medium temperatures >	150°C 200°C	

If the sensors of the capacitive measuring probes are operated at higher medium temperatures as listed in the a.m. table, measures have to be taken, that the danger of ignition caused by these hot surfaces is excluded. The max, permissible temperature on the electronics/housing must not exceed the values as mentioned in the a.m. table.

#### Electrical data

Supply and signal circui (Terminals KI1/1, KI1/2; Ex-d connection room)

U = 20 ... 36 V d. c. U<sub>m</sub> = 253 V a. c.

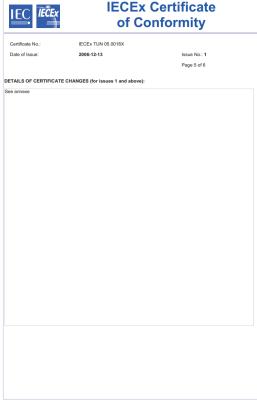
PA terminal of the capacitive measuring probe with

barrier P2-2LH (Screw terminal)

Operation and indication circuit (Terminals 5, 6, 7, 8 in the "i"-

Connection to the potential equalisation in the explosion hazardous area

in type of protection "Intrinsic Safety" Ex ia IIC only for connection to the intrinsically safe circuit of the









## Testing Laboratory Explosion Protected Equipment and Monitoring Devices

#### Page 1 of 2 Issue No. 1 of IECEx TUN 05.0018 X

IECEx ATR:	File reference:
DE/TUN/ExTR06.0043/01	06 TUN 553278
IECEx QAR:	File reference:
DE/QAR/TUN/06.0002/00	QAR TUN 04.0002

The capacitive measuring probes type VEGACAL CL6\*.DI\*\*HD\*\* are used for monitoring or control of filling levels in explosion hazardous areas.

The measuring media are allowed to be combustible liquids, gases, mists or vapours.

The changes refer to the mechanical and electrical construction of the measuring probes as well as to the electrical data.

Mechanical execution of the measuring probes

Туре	Electrodes
CL62. DI **HD**	partly insulated electrode, optionally with screening tube or concentric tube
CL63. DI **HD**	fully insulated electrode, optionally plated
CL64. DI **HD**	fully insulated electrode, optionally with screening tube, concentric tube or plated
CL65. DI **HD**	partly insulated cable electrode optionally with additionally insulated cable
CL66. DI **HD**	fully insulated cable electrode
CL69. DI **HD**	fully insulated 2-rod electrode

#### Electrical data

PA terminal of the

capacitive measuring probe with barrier

P2-2LH ...... Connection to the potential equalisation in the

(Screw terminal) explosion hazardous area



## Testing Laboratory Explosion Protected Equipment and Monitoring Devices

#### Page 2 of 2 Issue No. 1 of IECEx TUN 05.0018 X

in type of protection "Intrinsic Safety" Ex ia IIC

only for connection to the intrinsically safe circuit of the belonging external VEGA indication unit type

VEGADIS61 (IECEx PTB 06.0048)

The interconnection of the both intrinsically safe circuits was taken into account.

maximum values of the connection cable:

Co =  $2.4 \mu F$ Lo =  $160 \mu H$ 

Operation and indication module circuit .... (Spring contacts in the "i"-connection room)

in type of protection, Intrinsic Safety" Ex ia IIC only for connection to the VEGA operation and indication module (Plicscom)

in type of protection "Intrinsic Safety" Ex ia IIC only for connection to the intrinsically safe signal circuit of the VEGA interface converter type VEGACONNECT

lf

- the VEGA interface converter type VEGACONNECT and
- the external VEGA indication unit type VEGADIS61 (IECEx PTB 06.0048)
   are connected, the following maximum values of the connection cable to the VEGADIS61 do result:

 $C_o = 2.8 \mu F$  $L_o = 100 \mu H$ 

A length of the triax cable resp. coax cable between the housing for the electronics and the terminal housing of 10 m is permissible.

All intrinsically safe circuits of the capacitive measuring probes with built-in barrier KLEMP2-2LHD are safe galvanically separated from the non intrinsically safe supply and signal circuit and the parts which can be earthed.

All intrinsically safe circuits of the capacitive measuring probe with built-in barrier P2-2LH are galvanically connected with the earth potential (measuring circuit excluded)



#### INTERNATIONAL ELECTROTECHNICAL COMMISSION IEC Certification Scheme for Explosive Atmospheres

for rules and details of the IECEx Scheme visit www.iecex.com

Certificate No.:

Date of Issue:

IECEx TUN 05.0019X

issue No.:3

Page 1 of 4

Status

Current 2014-08-07

Certificate history:

Issue No. 3 (2014-8-7) Issue No. 2 (2008-10-

Issue No. 1 (2006-11-7)

Applicant:

VEGA Grieshaber KG Am Hohenstein 13

77761 Schiltach Germany

Electrical Apparatus: Optional accessory:

Capacitive Measuring Probe type VEGACAL CL6\*(\*),DI\*\*\*P/F\*\*\*\*(\*)(\*)

Type of Protection:

Flameproof Enclosures and Intrinsic Safety

Marking:

Ex d ia IIC T6 Ga/Gb, Gb

Approved for issue on behalf of the IECEx Certification Body:

Position:

Head of IECEx Certification Body

Signature: (for printed version)

Date:

1. This certificate and schedule may only be reproduced in full.

2. This certificate is not transferable and remains the property of the issuing body.

3. The Status and authenticity of this certificate may be verified by visiting the Official IECEx Website.

Certificate issued by:

**TÜV NORD CERT GmbH** Hanover Office Am TÜV 1 30519 Hannover Germany





Certificate No.:

IECEx TUN 05.0019X

Date of Issue:

2014-08-07

Issue No.: 3

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Manufacturer

VEGA Grieshaber KG Am Hohenstein 13 77761 Schiltach Germany

Additional Manufacturing location

(s)

VEGA Americas, Inc 4241 Allendorf Drive Cincinnati, Ohio 45209 United States of America

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

#### STANDARDS:

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

IEC 60079-0: 2011

Explosive atmospheres - Part 0: General requirements

Edition: 6.0

Explosive atmospheres - Part 1: Equipment protection by flameproof enclosures "d"

IEC 60079-1: 2007-04

303 90 900.000 10090 3480 44

IEC 60079-11: 2011

Edition: 6.0 IEC 60079-26 : 2006 Explosive atmospheres - Part 11: Equipment protection by intrinsic safety "¡"

Explosive atmospheres - Part 26: Equipment with equipment protection level (EPL) Ga

Edition: 2

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

#### TEST & ASSESSMENT REPORTS:

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

IECEX ATR

DE/TUN/ExTR 08.0036/01 IECEx QAR:

DE/TUN/QAR06.0002/05

File Reference: 14 217 141381



Date of Issue:	2014-08-07	Issu	ue No.: 3
		Pag	ge 3 of 4
	Sched	ule	
QUIPMENT:	Scried	uie	
uipment and systems co	vered by this certificate are as follow	'S:	
e annexe			
INDITIONS OF CERTIFIC	CATION: YES as shown below:		
ONDITIONS OF CERTIFIC	CATION: YES as shown below:		
	CATION: YES as shown below:		
	CATION: YES as shown below:		
	CATION: YES as shown below:		
	CATION: YES as shown below:		55 040
	CATION: YES as shown below:		51 040
	CATION: YES as shown below:		57 540
	CATION: YES as shown below:		17 (34)
	CATION: YES as shown below:		51 040
	CATION: YES as shown below:		55 040
	CATION: YES as shown below:		
	CATION: YES as shown below:		97



Certificate No.:

IECEx TUN 05.0019X

Date of Issue:

see annexe

2014-08-07

Issue No.: 3

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

Annex: Annexe\_COC\_VEGACALC\_issue 3\_TUN05.0019X\_.pdf



#### Page 1 of 4 Annexe to IECEx TUN 05.0019X Issue 3

IECEx TR:	File reference:
DE/TUN/ExTR08.0036/01	14 217 141381
IECEx QAR:	
DE/TUN/QAR/06.0002/05	

In the future, the following changes are performed for Capacitive Measuring Probe type VEGACAL CL6\*(\*).DI\*\*\*P/F\*\*\*\*(\*)(\*):

- 1. Update to actual standards
- 2. Changes regarding technical and electrical data
- 3. Changes regarding electric diagram
- 4. Changes to the layout
- 5. New components used
- 6. Application with PLICSCOM 02 added
- 7. Application with VEGADIS81 added
- 8. Introduction of new cables
- 9. Changes of the type code/marking
- 10. New manufacturing location added

#### **Electrical data**

#### Non-intrinsically safe circuits

VEGACAL CL6*(*).DI*** <b>H</b> ****(*)(*)	U	= 20 36 V DC

Supply and signal circuit  $U_m = 253 \text{ V AC}$ 

(terminal 1[+], 2[-] in the Ex-d connection compartment)

VEGACAL CL6\*(\*).Dl\*\*\*P/ $\mathbf{F}$ \*\*\*\*(\*)(\*) U = 16 ... 36 V DC Supply and signal circuit U<sub>m</sub> = 253 V AC

(terminal 1[+], 2[-] in the Ex-d connection

compartment)

#### Intrinsically safe circuits

Indicating and adjustment circuit: (terminals 5, 6, 7, 8 in Ex-i connection compartment or plug connection)

Ignition protection type intrinsic safety Ex ia IIC. For connection to the intrinsically safe circuit of the associated external indicating instrument VEGADIS 61 (IECEX PTB 06.0048).

The rules for the interconnection of intrinsically safe circuits between VEGACAL CL6\*(\*).DI\*\*\* and the external indicating and adjustment unit VEGADIS 61are maintained if the total inductance and total capacitance of the connection cable between VEGACAL CL6\*(\*).DI\*\*\* and the external indicating unit VEGADIS 61/81 L<sub>cable</sub>=100µH and



#### Page 2 of 4 Annexe to IECEx TUN 05.0019X Issue 3

C<sub>cable</sub>=2.8µF are not exceeded.
The indication and adjustment module integrated in CL6\*(\*).DI\*\*\* and the connected VEGACONNECT are taken into account.

Communication circuit (I<sup>2</sup>C bus socket in "Ex-i" connection compartment)

In ignition protection intrinsic safety Ex ia IIC.

Only for connection to the intrinsically safe signal circuit of a certified VEGA interface converter VEGACONNECT. The VEGA communication unit VEGACONNECT may only be operated on VEGACAL CL6\*(\*).DI\*\*\*H/P/F\*\*\*\*(\*)(\*), if there is no explosive atmosphere.

Indicating and adjustment module circuit (spring contacts in the "Ex i" connection compartment)

Ignition protection intrinsic safety Ex ia IIC. Only for connection to the indicating and adjustment module.

Capacitive measuring circuit: (separate electronics version)

Ignition protection intrinsic safety Ex ia IIC. For the version with separate housing the length of the triax or coax connection cable between electronics housing and electrode housing (remote housing) may not exceed 10 m.

The intrinsically safe circuits of the VEGACAL CL6\*(\*).Dl\*\*\*P/F\*\*\*\*(\*)(\*) are reliably galvanically separated from the non-intrinsically safe signal and supply circuits and parts which can be grounded.



### Page 3 of 4 Annexe to IECEx TUN 05.0019X Issue 3

Permissible ambient temperatures:

#### EPL-Ga/Gb instruments: VEGACAL CL6\*(\*).DI\*\*\*H\*\*\*\*(\*)(\*)

Temperature class	Permissible ambient temperature on the electronics	Permissible ambient temperature on the sensor
T6	-40°C +57°C	-20°C +60°C
T5 T1	-40°C +60°C	-20°C +60°C

For applications requiring instruments EPL-Ga/Gb the pressure at the sensor probe must be between 0.8 bar to 1.1 bar

The permissible operating temperatures and pressures without explosive atmosphere are mentioned in the respective manufacturer instructions for each probe type.

#### VEGACAL CL6\*(\*).DI\*\*\*P/F\*\*\*\*(\*)(\*)

Temperature class	Permissible ambient temperature on the electronics	Permissible ambient temperature on the sensor
Т6	-40°C +38°C	-20°C +60°C
T5	-40°C +53°C	-20°C +60°C
T4 T1	-40°C +60°C	-20°C +60°C

For applications requiring instruments EPL-Ga/Gb the pressure at the sensor probe must be between 0.8 bar to 1.1 bar.

The permissible operating temperatures and pressures without explosive atmosphere are mentioned in the respective manufacturer instructions for each probe type.

#### **EPL-Gb instruments:**

VEGACAL CL6\*(\*).DI\*\*\*H\*\*\*\*(\*)(\*)

Temperatu re class	Permissible ambient temperature on the electronics	Permissible ambient temperature on the sensor with PE/PA insulation	Permissible ambient temperature on the other sensors without temperature adapter	Permissible ambient temperature on the other sensors with temperature adapter
T6	-40°C +57°C		-50°C +85°C	-50°C +85°C
T5	-40°C +60°C	-40°C +80°C	-50°C +100°C	-50°C +100°C
T4	-40°C +60°C	-40°C +80°C	-50°C +135°C	-50°C +135°C
T3, T2, T1	-40°C +60°C	-40°C +80°C	-50°C +150°C	-50°C +200°C



#### Page 4 of 4 Annexe to IECEx TUN 05.0019X Issue 3

If the sensors of the capacitive probes are operated at temperatures higher than those specified in the above table, appropriate measures need to be performed that the danger of ignition caused by these hot surfaces is excluded.

The permissible operating temperatures and pressures without explosive atmosphere are mentioned in the respective manufacturer instructions for each probe type.

VEGACAL CL6\*(\*).DI\*\*\*P/F\*\*\*\*(\*)(\*)

TEGROAL C	/LO ( ).DI I/I	\		
Temperatu	Permissible	Permissible ambient	Permissible ambient	Permissible
re class	ambient	temperature on the	temperature on the	ambient
	temperature on	sensor with PE/PA	other sensors	temperature on
	the electronics	insulation		
			adapter	with temperature
				adapter
T6	-40°C +38°C	-40°C +80°C	-50°C +85°C	-50°C +85°C
T5	-40°C +53°C	-40°C +80°C	-50°C +100°C	-50°C +100°C
T4	-40°C +60°C	-40°C +80°C	-50°C +135°C	-50°C +135°C
T3, T2, T1	-40°C +60°C	-40°C +80°C	-50°C +150°C	-50°C +200°C

If the sensors of the capacitive probes are operated at temperatures higher than those specified in the above table, appropriate measures need to be performed that the danger of ignition caused by these hot surfaces is excluded.

The permissible operating temperatures and pressures without explosive atmosphere are mentioned in the respective manufacturer instructions for each probe type.



## INTERNATIONAL ELECTROTECHNICAL COMMISSION IEC Certification Scheme for Explosive Atmospheres

for rules and details of the IECEx Scheme visit www.iecex.com

Certi		

IECEx TUN 05.0019X

issue No.:2

Status:

Current

Certificate history: Issue No. 2 (2008-10-17)

Issue No. 1 (2006-11-7)

Date of Issue:

2008-10-17

Page 1 of 4

Applicant:

VEGA Grieshaber KG Am Hohenstein 13

77761 Schiltach Germany

Electrical Apparatus:

Capacitive Measuring Probe type VEGACAL CL6\*.DI\*\*\*P/F\*\*\*\*

Optional accessory:

Type of Protection:

Flameproof Enclosures and Intrinsic Safety

Marking:

Zone 0/1 Ex d ia IIC T6

Approved for issue on behalf of the IECEx Certification Body:

Karl-Heinz Schwedt

Position:

Head of IECEx CB

Signature:

(for printed version)

Date:

2008-10-17

1. This certificate and schedule may only be reproduced in full.

2. This certificate is not transferable and remains the property of the issuing body.

3. The Status and authenticity of this certificate may be verified by visiting the Official IECEx Website.

Certificate issued by:

TÜV NORD CERT GmbH Hanover Office Am TÜV 1 30519 Hannover Germany





Certificate No.:

IECEx TUN 05.0019X

Date of Issue:

2008-10-17

Issue No.: 2 Page 2 of 4

Manufacturer:

VEGA Grieshaber KG Am Hohenstein 13 77761 Schiltach Germany

#### Manufacturing location(s):

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

#### STANDARDS:

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

IEC 60079-0: 2004

Electrical apparatus for explosive gas atmospheres - Part 0: General requirements

Edition: 4.0

IEC 60079-1: 2003

Electrical apparatus for explosive gas atmospheres - Part 1: Flameproof enclosure 'd'

Edition: 5

IEC 60079-11: 2006

Explosive atmospheres - Part 11: Equipment protection by intrinsic safety "i"

Edition: 5 IEC 60079-26: 2004

Electrical apparatus for explosve gas atmospheres - Part 26: Construction, test and marking of Group II Zone 0 electrical apparatus

Edition: 1

This Certificate does not indicate compliance with electrical safety and performance requirements other than those

#### **TEST & ASSESSMENT REPORTS:**

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

expressly included in the Standards listed above.

IECEx ATR:

DE/TUN/ExTR 08.0036.00

File Reference:

08 204 554740



Certificate No.:

IECEx TUN 05.0019X

Date of Issue:

2008-10-17

Issue No.: 2

Page 3 of 4

Schedule

#### EQUIPMENT:

Equipment and systems covered by this certificate are as follows:

The capacitive measuring probes type VEGACAL CL6\*.DI\*\*P/FD\* are used for monitoring or control of filling levels in explosion hazardous areas. The measuring media are allowed to be combustible liquids, gases, mists or vapours. The capacitive measuring probes type VEGACAL CL6\*.DI\*\*P/FD\* consist of an electronic housing for the barriers with an Ex-d connection room, an Ex-i connection room with inserted measuring electronics, a process adapting element and a measuring sensor.

Mechanical execution of the capacitive measuring probes:

type	electrodes
CL62.D_**P/FD*	partly insulated electrode, optionally with screening tube or concentric tube
CL63.D_**P/FD*	fully insulated electrode, optionally plated
CL64.D_**P/FD*	fully insulated electrode, optionally with screening tube, concentric tube or plated
CL65.D_**P/FD*	partly insulated cable electrode optionally with additionally insulated cable
CL66.D_**P/FD*	fully insulated cable electrode

#### CONDITIONS OF CERTIFICATION: YES as shown below:

- At the plastic parts of the capacitive measuring probes type VEGACALP CL6\*-Cl\*\*P/FD\* there is a danger of ignition by electrostatic discharge. Observe manual of the manufacturer and warning label.
- The flameproof terminal box (Ex-d connection room) of this equipment must be provided with cable entries and filler plugs resp. conduits which are certified according to IEC 60 079-0 and IEC 60 079-1.
- The connection cables, the cable entries and filler plugs resp. the conduits have to be suitable for the lowest ambient temperature.



Certificate No.:	IECEx TUN 05.0019X		
Date of Issue:	2008-10-17	Issue No.: 2	
		Page 4 of 4	
ETAILS OF CERTIFICAT	E CHANGES (for issues 1 and above):		
See annexe	COMMODS (for issues 1 and above).		
see annexe			

Annexe: 2nd supplement\_COC\_VEGACAL CL6\_DI\_P\_F.pdf

#### **IECEx Certification Body**



#### Page 1 of 3 Issue No. 2 of IECEx TUN 05.0019 X

IECEx TR:	File reference:	
DE/TUN/ExTR08.0036/00	08 204 554740	
IECEx QAR:	File reference:	
DE/QAR/TUN/06.0002/00	QAR/TUN/QAR06.0002/00	

The capacitive measuring probes type VEGACAL CL6\*.DI\*\*\*P/F\*\*\*\* are used for monitoring or control of filling levels in explosion hazardous areas.

The measuring media are allowed to be combustible liquids, gases, mists or vapours.

The capacitive measuring probes type VEGACAL CL6\*.DI\*\*\*P/F\*\*\*\* consist of an electronic housing for the barrier with an Ex-d connection room, an Ex-i connection room with inserted measuring electronics, a process adapting element and a measuring sensor.

The changes refer to the type designation mentioned above, the mechanical construction, the temperature range in the area of the electronics/of the medium, the electrical data, the special conditions for safe use and the marking.

The marking reads as follows: Zone 0/1 Ex d ia IIC Tx (see tables for temperature ranges).

Type designation and mechanical execution of the measuring probes:

Type	Electrodes		
CL62.DI***P/F***	partly insulated electrode, optionally with screening tube or concentric tube		
CL63.DI*** P/F ****	fully insulated electrode, optionally plated		
CL64.DI*** P/F **** fully insulated electrode, optionally with screening tube, co			
CL65.DI*** P/F ****	partly insulated cable electrode optionally with additionally insulated cable		
CL66.DI*** P/F ****	fully insulated cable electrode		
CL69.DI*** P/F ****	* fully insulated 2-rod electrode		

If the capacitive measuring probes are mounted in explosion hazardous areas of the zone 1, the permissible temperature range in the area of the electronics/of the medium dependent on the temperature class has to be taken from the following table:

Temperature class	Ambient temperature range	Medium temperature range for electrodes with PE-insulation	Medium temperature range for other electrodes
T6	- 40°C + 47°C	- 40°C + 80°C	-50°C +85 °C
T5	- 40°C + 60°C	- 40°C + 80°C	-50°C +100 °C
T4	- 40°C + 60°C	- 40°C + 80°C	-50°C +135 °C
T3*, T2*, T1*	- 40°C + 60°C	- 40°C + 80°C	-50°C +150 °C

<sup>\*</sup> with temperature adapter for medium temperatures > 150°C ... 200°C

If the sensors of the capacitive measuring probes are operated at higher medium temperatures as listed in the a.m. table, measures have to be taken, that the danger of ignition caused by these hot surfaces is excluded. The max. permissible temperature on the electronics/housing must not exceed the values as mentioned in the a.m. table.



Electrical data

PA terminal of the



#### Page 2 of 3 Issue No. 2 of IECEx TUN 05.0019 X

If the capacitive measuring probes are mounted in the partition wall between explosion hazardous areas of the zone 0 (electrode) and zone 1 (electronics), the permissible temperature range in the area of the electronics/of the medium has to be taken from the following table:

Temperature class	Ambient temperature range	Medium temperature range
T6	-40 °C +47 °C	-20°C +60 °C
T5	-40 °C +60 °C	-20°C +60 °C
T4, T3, T2, T1	-40 °C +60 °C	-20°C +60 °C

The electrodes of the capacitive measuring probes are allowed to be operated in an explosion hazardous area of the zone 0, only if atmospheric conditions exist (pressure from 0.8 bar to 1.1 bar).

If no explosion hazardous atmospheres exist, the permissible operating temperatures and pressures have to be taken from the manufacturer's data (manual).

If the sensors of the capacitive measuring probes are operated at higher medium temperatures as listed in the a.m. table, measures have to be taken, that the danger of ignition caused by these hot surfaces is excluded. The max. permissible temperature at the electronics/housing must not exceed the values as mentioned in the a.m. table.

misotriodi data				
Supply and signal circuit	U	=	16	32 V d. c.
(Terminals KI1[+] KI2[-]:	11	_	253	Vac

(Terminals KI1[+], KI2[-];  $U_m = 253$  V a. c. Ex-d connection room)

Operation and indication circuit ...... in type of protection "Intrinsic Safety" Ex ia IIC (Terminals 5, 6, 7, 8 in the "i"-connection

room resp. plug connection) only for connection to the intrinsically safe circuit of the belonging external VEGA indication unit type

VEGADIS61 (IECEx PTB 06.0048)
The interconnection of the both intrinsically safe circuits was taken into account.

maximum values of the connection cable:

 $C_o = 2.4 \mu F$  $L_o = 160 \mu H$ 

Operation and indication module circuit ..... in type of protection "Intrinsic Safety" Ex ia IIC (Spring contacts in the "i"-connection room) only for connection to the VEGA operation and indication module (Plicscom)

**IECEx Certification Body** 



#### Page 3 of 3 Issue No. 2 of IECEx TUN 05.0019 X

lf

- the VEGA interface converter type VEGACONNECT and

 the external VEGA indication unit type VEGADIS61 (IECEx PTB 06.0048) are connected, the following maximum values of the connection cable to the VEGADIS61 do result:

 $C_o = 2.8 \mu F$  $L_o = 100 \mu H$ 

A length of the triax cable resp. coax cable between the housing for the electronics and the terminal housing of 10 m is permissible.

All intrinsically safe circuits of the capacitive measuring probe with built-in barrier KLEMP2-2LPA/FFD are galvanically connected with the earth potential (measuring circuit excluded)

#### Special conditions for safe use:

- At the plastic parts of the capacitive measuring probes type VEGACAL CP6\*.DI\*\*\* P/F \*\*\*\*
  there is a danger of ignition by electrostatic discharge. Observe manual of the manufacturer
  and warning label.
- For zone 0/1 applications and at risks by pendulum or vibration the respective parts of the
  capacitive measuring probes type VEGACAL CP65.DI\*\*\* P/F \*\*\*\* and type VEGACAL
  CP66.DI\*\*\* P/F \*\*\*\* have to be secured effectively against these dangers. Observe manual of
  the manufacturer.
- For zone 0/1 applications, at the metallic electrode parts of the capacitive measuring probes type VEGACAL CP6\*.DI\*\*\* P/F \*\*\*\* made of light metal there is a danger of ignition by impact or friction. Observe manual of the manufacturer.
- 4. For zone 0/1 applications the medium tangent materials have to be resistant to the media.
- The PA terminal of the capacitive measuring probes (internal or external screw terminal) has to be connected with the potential equalization of the explosion hazardous area.
- The flameproof terminal box (Ex-d connection room) of this equipment must be provided with cable entries and filler plugs resp. conduits which are certified according to IEC 60 079-0 and IEC 60 079-1.
- The connection cables, the cable entries and filler plugs resp. the conduits have to be suitable for the lowest ambient temperature.

#### **IECEx Certification Body**



#### Page 1 of 3 Issue No. 2 of IECEx TUN 05.0019 X

IECEx TR: DE/TUN/ExTR08.0036/00	File reference: 08 204 554740
IECEx QAR:	File reference:
DE/QAR/TUN/06.0002/00	QAR/TUN/QAR06.0002/00

The capacitive measuring probes type VEGACAL CL6\*.DI\*\*\*P/F\*\*\*\* are used for monitoring or control of filling levels in explosion hazardous areas.

The measuring media are allowed to be combustible liquids, gases, mists or vapours.

The capacitive measuring probes type VEGACAL CL6\*.DI\*\*\*P/F\*\*\*\* consist of an electronic housing for the barrier with an Ex-d connection room, an Ex-i connection room with inserted measuring electronics, a process adapting element and a measuring sensor.

The changes refer to the type designation mentioned above, the mechanical construction, the temperature range in the area of the electronics/of the medium, the electrical data, the special conditions for safe use and the marking.

The marking reads as follows: Zone 0/1 Ex d ia IIC Tx (see tables for temperature ranges).

Type designation and mechanical execution of the measuring probes:

Туре	Electrodes
CL62.DI***P/F***	partly insulated electrode, optionally with screening tube or concentric tube
	lube
CL63.DI*** P/F ****	fully insulated electrode, optionally plated
CL64.DI*** P/F ****	fully insulated electrode, optionally with screening tube, concentric tube or plated
	'
CL65.DI*** P/F ****	partly insulated cable electrode optionally with additionally insulated
	cable
CL66.DI*** P/F ****	fully insulated cable electrode
CL69.DI*** P/F ****	fully insulated 2-rod electrode

If the capacitive measuring probes are mounted in explosion hazardous areas of the zone 1, the permissible temperature range in the area of the electronics/of the medium dependent on the temperature class has to be taken from the following table:

Temperature	Ambient	Medium temperature	Medium temperature
class	temperature range	range	range for other
		for electrodes with PE-	electrodes
		insulation	
T6	- 40°C + 47°C	- 40°C + 80°C	-50°C +85 °C
T5	- 40°C + 60°C	- 40°C + 80°C	-50°C +100 °C
T4	- 40°C + 60°C	- 40°C + 80°C	-50°C +135 °C
T3*, T2*, T1*	- 40°C + 60°C	- 40°C + 80°C	-50°C +150 °C

<sup>\*</sup> with temperature adapter for medium temperatures > 150°C... 200°C

If the sensors of the capacitive measuring probes are operated at higher medium temperatures as listed in the a.m. table, measures have to be taken, that the danger of ignition caused by these hot surfaces is excluded. The max. permissible temperature on the electronics/housing must not exceed the values as mentioned in the a.m. table.

#### **IECEx Certification Body**



#### Page 2 of 3 Issue No. 2 of IECEx TUN 05.0019 X

If the capacitive measuring probes are mounted in the partition wall between explosion hazardous areas of the zone 0 (electrode) and zone 1 (electronics), the permissible temperature range in the area of the electronics/of the medium has to be taken from the following table:

Temperature class	Ambient temperature	Medium temperature
Temperature class	range	range
T6	-40 °C +47 °C	-20°C +60 °C
T5	-40 °C +60 °C	-20°C +60 °C
T4, T3, T2, T1	-40 °C +60 °C	-20°C +60 °C

The electrodes of the capacitive measuring probes are allowed to be operated in an explosion hazardous area of the zone 0, only if atmospheric conditions exist (pressure from 0.8 bar to 1.1 bar).

If no explosion hazardous atmospheres exist, the permissible operating temperatures and pressures have to be taken from the manufacturers data (manual).

If the sensors of the capacitive measuring probes are operated at higher medium temperatures as listed in the a.m. table, measures have to be taken, that the danger of ignition caused by these hot surfaces is excluded. The max. permissible temperature at the electronics/housing must not exceed the values as mentioned in the a.m. table.

#### 

Ex-d connection room)

Operation and indication circuit .....

PA terminal of the capacitive measuring probe with barrier KLEMP2-2LPA/FFD ....... Connection to the potential equalisation in the

(Screw terminal) confection to the potential equalisation in the explosion hazardous area

(Terminals 5, 6, 7, 8 in the "i"-connection room resp. plug connection) only for connection to the intrinsically safe circuit of the belonging external VEGA indication unit type

VEGADIS61 (IECEx PTB 06.0048)
The interconnection of the both intrinsically safe

circuits was taken into account.
maximum values of the connection cable:

in type of protection "Intrinsic Safety" Ex ia IIC

maximum values of the connection cable:  $rac{1}{2} = 2.4 \text{ µF}$ 

 $C_o = 2.4 \mu F$  $L_o = 160 \mu H$ 

Operation and indication module circuit ...... in type of protection "Intrinsic Safety" Ex ia IIC (Spring contacts in the "i"-connection room) only for connection to the VEGA operation and indication module (Plicscom)





#### Page 3 of 3 Issue No. 2 of IECEx TUN 05.0019 X

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- the VEGA interface converter type VEGACONNECT and
- the external VEGA indication unit type VEGADIS61 (IECEx PTB 06.0048) are connected, the following maximum values of the connection cable to the VEGADIS61 do result:

 $C_o = 2.8 \mu F$  $L_o = 100 \mu H$ 

A length of the triax cable resp. coax cable between the housing for the electronics and the terminal housing of 10 m is permissible.

All intrinsically safe circuits of the capacitive measuring probe with built-in barrier KLEMP2-2LPA/FFD are galvanically connected with the earth potential (measuring circuit excluded)

#### Special conditions for safe use:

- At the plastic parts of the capacitive measuring probes type VEGACAL CP6\*.DI\*\*\* P/F \*\*\*\*
  there is a danger of ignition by electrostatic discharge. Observe manual of the manufacturer
  and warning label.
- For zone 0/1 applications and at risks by pendulum or vibration the respective parts of the
  capacitive measuring probes type VEGACAL CP65.DI\*\*\* P/F \*\*\*\* and type VEGACAL
  CP66.DI\*\*\* P/F \*\*\*\* have to be secured effectively against these dangers. Observe manual of
  the manufacturer
- 3. For zone 0/1 applications, at the metallic electrode parts of the capacitive measuring probes type VEGACAL CP6\*.DI\*\*\* P/F \*\*\*\* made of light metal there is a danger of ignition by impact or friction. Observe manual of the manufacturer.
- 4. For zone 0/1 applications the medium tangent materials have to be resistant to the media.
- 5. The PA terminal of the capacitive measuring probes (internal or external screw terminal) has to be connected with the potential equalization of the explosion hazardous area.
- The flameproof terminal box (Ex-d connection room) of this equipment must be provided with cable entries and filler plugs resp. conduits which are certified according to IEC 60 079-0 and IEC 60 079-1.
- 7. The connection cables, the cable entries and filler plugs resp. the conduits have to be suitable for the lowest ambient temperature.



## INTERNATIONAL ELECTROTECHNICAL COMMISSION IEC Certification Scheme for Explosive Atmospheres for rules and details of the IECEX Scheme visit www.lecex.com

Certificate No.:	IECEx TUN 05.0019X	Issue No.: 1
Status:	Current	
Date of Issue:	2006-11-07	Page 1 of 6
Applicant:	VEGA Grieshaber KG Am Hohenstein 13 77761 Schiltach Germany	
Electrical Apparatus: Optional accessory:	Capacitive Measuring Probe –	type VEGACAL CL6*.DI**P/FD*
Type of Protection:	Flameproof Enclosures and I	ntrinsic Safety
Marking:	Ex d ia IIC T6	
	n behalf of the IECEx	Karl-Heinz Schwedt
Certification Body: Position:		Head of IECEx CB
r osidon,		Head of IECEX CB
Signature: (for printed version)		
Date:		
This certificate and     This certificate is n	schedule may only be reproduced of transferable and remains the pro	l in full.  operty of the issuing body.  verified by visiting the Official IECEx Website.

TÜV NORD CERT GmbH & Co.

Certificate issued by:

Am TUV1 D-30519 Hannover Germany





Certificate No.:

**IECEx TUN 05.0019X** 

Date of Issue:

2006-11-07

Issue No.: 1

Page 2 of 6

Manufacturer:

**VEGA Grieshaber KG** Am Hohenstein 13 77761 Schiltach Germany

Manufacturing location(s):

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

#### STANDARDS:

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

IEC 60079-0: 2004

Electrical apparatus for explosive gas atmospheres - Part 0: General requirements

Edition: 4.0

IEC 60079-1: 2003 Edition: 5

Electrical apparatus for explosive gas atmospheres - Part 1: Flameproof enclosure 'd'

IEC 60079-11: 1999

Edition: 4

Electrical apparatus for explosive gas atmospheres - Part 11: Intrinsic safety 'i'

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

#### TEST & ASSESSMENT REPORTS:

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

IECEX ATR: File Reference: DE/TUN/05/551830 05YEX551830 DE/TUN/05/552076-1 05YEX552076-1



Certificate No.:

**IECEX TUN 05.0019X** 

Date of Issue:

2006-11-07

Issue No.: 1

Page 3 of 6

#### Schedule

#### EQUIPMENT:

Equipment and systems covered by this certificate are as follows:

The capacitive measuring probes type VEGACAL CL6\*.DI\*\*P/FD\* are used

for monitoring or control of filling levels in explosion hazardous areas.

The measuring media are allowed to be combustible liquids, gases, mists or vapours.

The capacitive measuring probes type VEGACAL CL6\*.DI\*\*P/FD\* consist

of an electronic housing for the barriers with an Ex-d connection room,

an Ex-i connection room with inserted measuring electronics, a process adapting element and a measuring sensor.

Mechanical execution of the capacitive measuring probes

Mechanical execution of t	ne capacitive measuring probes:
type	electrodes
CL62.D_**P/FD*	partly insulated electrode, optionally with screening tube or concentric tube
CL63.D_**P/FD*	fully insulated electrode, optionally plated
CL64.D_**P/FD*	fully insulated electrode, optionally with screening tube, concentric tube or plated
CL65.D_**P/FD*	partly insulated cable electrode optionally with additionally insulated cable
CL66.D_**P/FD*	fully insulated cable electrode

#### CONDITIONS OF CERTIFICATION: YES as shown below:

1. At the plastic parts of the capacitive measuring probes type

VEGACALP CL6\*.Cl\*\*P/FD\* there is a danger of ignition by electrostatic discharge. Observe manual of the manufacturer and warning label.

- The flameproof terminal box (Ex-d connection room) of this equipment must be provided with cable entries and filler plugs resp. conduits which are certified according to IEC 60 079-0 and IEC 60 079-1.
- The connection cables, the cable entries and filler plugs resp. the conduits have to be suitable for the lowest ambient temperature.



Certificate No.: IECEx TUN 05.0019X

Date of Issue: 2006-11-07 Issue No.: 1

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#### EQUIPMENT(continued):

The permissible temperature range in the area of the electronics/of the medium dependent on the temperature class has to be taken from the following table:

temperature class	ambient temperature range on the electronics/housing	medium temperature range for electrodes with PE/PA- insulation	medium temperature range for other electrodes
T6	- 40°C + 47°C	- 40°C + 80°C	-50°C +85 °C
T5	- 40°C + 60°C	- 40°C + 80°C	-50°C +100 °C
T4	- 40°C + 60°C	- 40°C + 80°C	-50°C +135 °C
T3*, T2*, T1*	- 40°C + 60°C	- 40°C + 80°C	-50°C +150 °C

<sup>\*</sup> with temperature adapter for medium temperatures > 150°C ... 200°C

If the sensors of the capacitive measuring probes are operated at higher medium temperatures as listed in the a.m. table, measures have to be taken, that the danger of ignition caused by these hot surfaces is excluded. The max. permissible temperature on the electronics/housing must not exceed the values as mentioned in the a.m. table.

#### Electrical data

Supply and signal circuit U = 9 ... 36 V d. c. (Terminals KI1/1, KI1/2; U<sub>m</sub> = 253 V a. c. Ex-d connection room)

Operation and indication circuit (Terminals 5, 6, 7, 8 resp. plug connection in the "i"-connection room) in type of protection "Intrinsic Safety" Ex ia IIC only for connection to the intrinsically safe circuit of the belonging external VEGA indication unit type VEGADIS61

The interconnection of the both intrinsically safe circuits was taken into account.

maximum values of the connection cable:

 $C_0 = 2,4 \mu F$  $L_0 = 160 \mu H$ 

Operation and indication module

(Spring contacts in the "i"-connection room)

in type of protection "Intrinsic Safety" Ex ia IIC only for connection to the VEGA operation and indication module

(Plicscom)



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

See annexe



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#### Additional information:

Communication circuit in type of protection "Intrinsic Safety" Ex ia IIC only for connection to the intrinsically safe signal circuit of the VEGA interface converter type VEGACONNECT3

The VEGA interface converter may only be operated together with the capacitive measuring probe, if no explosion hazardous atmosphere exists.

A length of the triax cable resp. coax cable between the housing for the electronics and the terminal housing of 10 m is permissible.

All intrinsically safe circuits of the capacitive measuring probes with built-in barrier KLEMP2-2LPAD are safe galvanically separated from the non intrinsically safe supply and signal circuit and the parts which can be earthed.

Annexe: CAL CL6-.DI--P-FD--\_1Erg.pdf



### Testing Laboratory Explosion Protected Equipment and Monitoring Devices

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IECEx ATR:	File reference:
DE/TUN/ExTR06.0042/01	06 TUN 553280
IECEx QAR:	File reference:
DE/QAR/TUN/06.0002/00	QAR/TUN/QAR06.0002/00

The capacitive measuring probes type VEGACAL CL6\*.DI\*\*P/FD\*\* are used for monitoring or control of filling levels in explosion hazardous areas.

The measuring media are allowed to be combustible liquids, gases, mists or vapours.

The changes refer to the mechanical and electrical construction of the measuring probes as well as to the electrical data.

Mechanical execution of the measuring probes

Type	Electrodes
CL62.DI**P/FD**	partly insulated electrode, optionally with screening tube or concentric tube
CL63.DI**P/FD**	fully insulated electrode, optionally plated
CL64.DI**P/FD**	fully insulated electrode, optionally with screening tube, concentric tube or plated
CL65.DI**P/FD**	partly insulated cable electrode optionally with additionally insulated cable
CL66.DI**P/FD**	fully insulated cable electrode
CL69.DI**P/FD**	fully insulated 2-rod electrode

#### Electrical data

Supply and signal circuit	U	=	16	32 V d. c.
(Terminals KI1[+], KI2[-];	Um	=	253	Va.c.
Ex-d connection room)				

PA terminal ...... Connection to the potential equalisation in the explosion

hazardous area

Operation and indication circuit ...... in type of protection "Intrinsic Safety" Ex ia IIC

(Terminals 5, 6, 7, 8

resp. only for connection to the intrinsically safe circuit of the plug connection belonging external VEGA indication unit type

in the "i" connection room) VEGADIS61

(IECEx PTB 06.0048)

The interconnection of the both intrinsically safe circuits

was taken into account.

maximum values of the connection cable:

 $C_o = 2.4 \mu F$  $L_o = 160 \mu H$ 

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### Testing Laboratory Explosion Protected Equipment and Monitoring Devices

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Communication circuit	in type of protection "Intrinsic Safety" Ex ia IIC
(I2C bus in the "i" connection room)	
	only for connection to the intrinsically safe signal circuit
	of the VEGA interface converter type VEGACONNECTS

If

- the VEGA interface converter type VEGACONNECT3 and
- the external VEGA indication unit type VEGADIS61 (IECEx PTB 06.0048) are connected, the following maximum values of the connection cable to the VEGADIS61 do result:

 $C_o = 2.8 \mu F$  $L_o = 100 \mu H$ 

All other details as well as the "Special conditions for safe" use apply unchanged for this supplement.



## Testing Laboratory Explosion Protected Equipment and Monitoring Devices

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The capacitive measuring probes type VEGACAL CL6\*.DI\*\*P/FD\*\* are used for monitoring or control of filling levels in explosion hazardous areas.

The measuring media are allowed to be combustible liquids, gases, mists or vapours.

The changes refer to the mechanical and electrical construction of the measuring probes as well as to the electrical data.

Mechanical execution of the measuring probes

Туре	Electrodes
CL62.DI**P/FD**	partly insulated electrode, optionally with screening tube or concentric tube
CL63.DI**P/FD**	fully insulated electrode, optionally plated
CL64.DI**P/FD**	fully insulated electrode, optionally with screening tube, concentric tube or plated
CL65.DI**P/FD**	partly insulated cable electrode optionally with additionally insulated cable
CL66.DI**P/FD**	fully insulated cable electrode
CL69.DI**P/FD**	fully insulated 2-rod electrode

#### Electrical data

Supply and signal circuit ...... U = 16...32 V d. c. (Terminals Kl1[+], Kl2[-]; U<sub>m</sub> = 253 V a. c. Ex-d connection room)

PA terminal ...... Connection to the potential equalisation in the explosion

hazardous area

Operation and indication circuit ...... in type of protection "Intrinsic Safety" Ex ia IIC

(Terminals 5, 6, 7, 8

resp.

plua connection

in the "i" connection room)

only for connection to the intrinsically safe circuit of the belonging external VEGA indication unit type

VEGADIS61

(IECEx PTB 06.0048)

The interconnection of the both intrinsically safe circuits

was taken into account.

maximum values of the connection cable:

 $C_o = 2.4 \mu F$  $L_o = 160 \mu H$ 



## Testing Laboratory Explosion Protected Equipment and Monitoring Devices

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Communication circuit ...... in type of protection "Intrinsic Safety" Ex ia IIC ( $I^2C$  bus in the "i" connection room)

only for connection to the intrinsically safe signal circuit of the VEGA interface converter type VEGACONNECT3

lf

- the VEGA interface converter type VEGACONNECT3 and

- the external VEGA indication unit type VEGADIS61 (IECEx PTB 06.0048) are connected, the following maximum values of the connection cable to the VEGADIS61 do result:

 $C_o = 2.8 \mu F$  $L_o = 100 \mu H$ 

All other details as well as the "Special conditions for safe" use apply unchanged for this supplement.