Safety instructions
VEGAMET 381

Intrinsic safety

CE 0044

Document ID: 30390

Contents

Please note:

These safety instructions are part of the following documentation:

- Betriebsanleitungen VEGAMET 381 Ex (Document ID: 30418)
- EU-type approval certificate TÜV 05 ATEX 2719 X (Document ID: 32844)

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DE	Sicherheitshinweise für den Einsatz in explosionsgefährdeten Bereichen
EN	Safety instructions for the use in hazardous areas
FR	Consignes de sécurité pour une application en atmosphères explosibles
IT	Normative di sicurezza per l'impiego in luoghi con pericolo di esplosione
ES	Instrucciones de seguridad para el empleo en áreas con riesgo de explosión
PT	Normas de segurança para utilização em zonas sujeitas a explosão
NL	Veiligheidsaanwijzingen voor gebruik op plaatsen waar ontploffingsgevaar kan heersen
SV	Säkerhetsanvisningar för användning i explosiionsfarliga områden
DA	Sikkerhedsforskrifter til anvendelse i explosionsfarlig atmosfare
FI	Turvallisuusohjeet räjähdysvaarallisisssa tiloissa käyttöä varten
EL	Υποδείξεις ασΦαλείας για τη χρησιμοποίηση σε περιοχές που υπάρχει κίνδυνος έκρηξης

DE	Die vorliegenden Sicherheitshinweise sind im Download unter www.vega.com standardmäßig in den Sprachen deutsch, englisch, französisch und spanisch verfügbar. Weitere EU-Landessprachen stellt VEGA nach Anforderungen zur Verfügung.
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FR	Les présentes consignes de sécurité sont disponibles au téléchargement sous www.vega.com en standard en allemand, en anglais, en francais et en espagnol. VEGA met à disposition d'autres langues de l'Union Européenne selon les exigences.
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1 Area of applicability

These safety instructions apply to the controllers according to EU type approval certificate TÜV 05 ATEX 2719 X (certificate number on the type label) and for all instruments with the number of the safety instruction (30390) on the type label.

2 General information

The controller VEGAMET 381 are accessory electrical devices used to process intrinsically safe 4 … 20 mA/HART signals as well as to supply intrinsically safe sensors with power. They are also used to galvanically isolate intrinsically safe circuits from non-intrinsically safe circuits.

If the VEGAMET 381 is used for power supply of intrinsically safe sensors that are installed and operated in hazardous areas, the general Ex mounting instructions EN 60079-14 as well as these safety instructions have to be observed.

The operating instructions as well as the installation regulations or standards that apply for explosion protection of electrical systems must generally be observed.

The installation of explosion-endangered systems must always be carried out by qualified personnel.

Type of protection marking:

- II (1) G [Ex ia Ga] IIC
- II (1) D [Ex ia Da] IIIC
- I (M1) [Ex ia Ma] I

3 Electrical data

Operating voltage:	
Connections Kl5, Kl6	For connection to non-instrinsically safe circuits with following maximum values: U = 24 … 230 V AC/DC (-15 … +10 %) U_m = 253 V AC

Signal circuit:	**Slide switch position Ia, 4 … 20 mA active:**
Connections Kl1 [+], Kl2 [-]	In type of protection intrinsic safety Ex ia I/IIC/IIB (IIIC): For connection to passive, instrinsically safe circuits, maximum values of the active signal circuit: U_o = 22.5 V I_o = 104 mA P_o = 585 mW Characteristics: linear Effective internal capacitance C_i = negligibly small Effective internal inductance L_i = negligibly small

The maximum permissible values for the external inductance L_o and the external capacitance C_o can be taken from the following tables:

Ex ia I	L_o [mH]	70	50	10	0.2	0.1
	C_o [µF]	1.9	2.4	3.1	4.8	5.4
Ex ia IIC	L_o [mH]	2.5	2	0.5	0.2	0.1
	C_o [µF]	0.058	0.063	0.099	0.13	0.154

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Ex ia IIB (IIIC)	L_o [mH]	20	10	1	0.5	0.2
	C_o [µF]	0.64	0.7	0.750	0.86	1.08

Signal circuit:	**Slide switch position Ip, 4 … 20 mA passive:**		
	For connection to external certified, active, intrinsically safe circuits with linear characteristics line, maximum values of the active intrinsically safe circuit to be connected to the terminals Kl1 and Kl2.		
	IIC	IIB	I
	U_o = 22.5 V	U_o = 22.5 V	U_o = 22.5 V
	I_o = 70 mA	I_o = 200 mA	I_o = 200 mA
	Effective internal capacitance C_i = negligibly small Effective internal inductance L_i = negligibly small		

The maximum permissible values for the external inductance L_o and the external capacitance C_o can be taken from the following tables:

Ex ia I	L_o [mH]	16	10	1	0.2	0.1
	C_o [µF]	2.7	2.9	3.1	4.6	5.4
Ex ia IIC	L_o [mH]	7.1	1	0.5	0.2	0.1
	C_o [µF]	0.077	0.09	0.11	0.14	0.154
Ex ia IIB (IIIC)	L_o [mH]	4.1	1	0.5	0.2	0.1
	C_o [µF]	0.58	0.65	0.78	1	1.08

Relay circuit:	
Relay output 1: Connections Kl8, Kl9, Kl10	For connection to non-instrinsically safe circuits with following maximum values: 253 V DC, 2 A, 125 VA 253 V AC, 1 A, 54 W
Relay output 2: Connections Kl11, Kl12, Kl13	
Relay output 3: Connections Kl14, Kl15, Kl16	
Relay output 4: Connections Kl17, Kl18	

Current output:	
Connections Kl3, Kl4	For connection to non-instrinsically safe circuits with following maximum values: 0/4 … 20 mA U_m = 253 V AC

The intrinsically safe supply and signal circuit is separated from the non-intrinsically safe circuits up to a peak value of the voltage of 375 V.

4 Thermal data

Ambient conditions

	Ambient temperature (Ta)
Permissible ambient temperature range during operation	-20 … +60 °C

Electrical protective measures

Protection rating	
Wall, rail mounting	IP20
Front panel mounting	IP40

The permissible operating temperatures without explosion-endangered atmosphere are mentioned in the respective manufacturer instructions, e.g. operating instructions manuals.

5 Installation

The VEGAMET 381 must be operated outside the hazardous area. The separating wall must be installed before setup. Please observe the instructions in the operating instructions manual.

The VEGAMET 381 may be operated only in areas that allow protection IP20. Otherwise, it must be mounted in an outer housing with the necessary protection rating.

If the intrinsically safe circuit is led into dust-explosive areas of zone 20 or 21, please make sure that the instruments connected to these circuits meet the requirements of category 1D or 2D and are certified respectively.

Printing date:

All statements concerning scope of delivery, application, practical use and operating conditions of the sensors and processing systems correspond to the information available at the time of printing.
Subject to change without prior notice

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