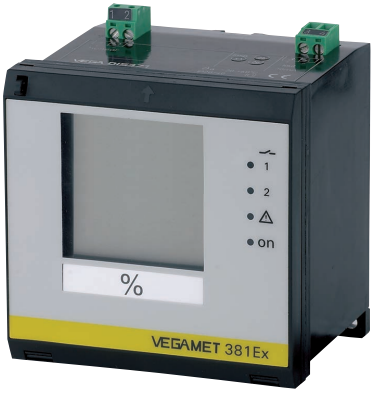
Safety instructions
VEGAMET 381

Intrinsic safety



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Contents

Please note:

These safety instructions are part of the following documentation:

- Betriebsanleitungen VEGAMET 381 Ex (Document ID: 30418)
- Certificate of Conformity IECEx TUN 05.0001 X (Document ID: 41267)

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1 Area of applicability

These safety instructions apply to controllers according to the Certificate of Conformity IECEx TUN 05.0001 X (certificate number on the type label) and for all instruments with the number of the safety instruction (30487) 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 IEC 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:

- [Ex ia Ga] IIC
- [Ex ia Da] IIIC
- [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

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)
Zulässiger Umgebungstemperaturbereich im Betrieb	-20 … +60 °C

Electrical protective measures

Protection rating	
Wand-, Tragschienenmontage	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

If the controllers are not set up in dry and clean environments, they must be mounted in a housing with the required protection rating.

The controllers must be operated outside hazardous areas. The separating wall must be installed before setup.

If the intrinsically safe circuit is fed into explosive areas of zone 0/1 or 20/21, please make sure that the instruments connected to these circuits meet the requirements of zone 0/1 or 20/21 and are certified accordingly.

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VEGA Grieshaber KG
Am Hohenstein 113
77761 Schiltach
Germany

Phone +49 7836 50-0
E-mail: info.de@vega.com
www.vega.com