Safety instructions
VEGAMET 391

Intrinsic safety

CE 0044

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Contents

Supplementary documentation:

- Operating Instructions VEGAMET 391
- EU type approval certificate TÜV 09 ATEX 555127 X (Document ID: 40325)

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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 VEGAMET 391 according to EU type approval certificate TÜV 09 ATEX 555127 X (certificate number on the type label) and for all instruments with the number of the safety instruction (40324) on the type label.

2 General information

The controller VEGAMET 391 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 391 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 KI2 [13, 14]	For connection to non-instrinsically safe circuits with following maximum values: U = 24 … 65 V DC (-15 … +10 %) U = 24 … 230 V AC (-15 … +10 %) U_m = 253 V AC

Supply and signal circuit:	
Connections KI1 [1, 2]	In Ignition protection type Intrinsic safety Ex ia I/IIC/IIB (IIIC) with following maximum values each circuit: U_o = 24.2 V I_o = 110 mA P_o = 662 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]	60	20	1	0.2	0.1
	C_o [µF]	1.8	2.5	2.8	4.3	4.5
Ex ia IIC	L_o [mH]	1.6	1	0.5	0.2	0.1
	C_o [µF]	0.052	0.066	0.086	0.12	0.122

Ex ia IIB (IIIC)	L_o [mH]	17	1	0.5	0.2	-
	C_o [µF]	0.55	0.63	0.75	0.91	-

With additionally connected VEGACONNECT via HART connecting cable (connections KI1 [3, 4]).

Supply and signal circuit:	
Connections KI1 [1, 2]	In Ignition protection type Intrinsic safety Ex ia I/IIC/IIB (IIIC) with following maximum values each circuit: U_o = 24.2 V I_o = 113.7 mA P_o = 668 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]	56	20	1	0.5	0.1
	C_o [µF]	1.8	2.5	2.8	3.3	4.5
Ex ia IIC	L_o [mH]	1.4	1	0.5	0.2	0.1
	C_o [µF]	0.054	0.065	0.085	0.12	0.122
Ex ia IIB (IIIC)	L_o [mH]	15	1	0.5	0.2	-
	C_o [µF]	0.55	0.63	0.75	0.91	-

Relay circuit:	
Relay output 1: Connections KI2 [19, 20, 21]	For connection to non-instrinsically safe circuits with following maximum values: 253 V DC, 2 A, 125 VA 60 V AC, 1 A, 54 W
Relay output 2: Connections KI2 [22, 23, 24]	
Relay output 3: Connections KI3 [25, 26, 27]	
Relay output 4: Connections KI3 [28, 29, 30]	
Relay output 5: Connections KI3 [31, 32, 33]	
Relay output 6: Connections KI3 [34, 35, 36]	

Current output:	
Connections KI2 [16, 17]	For connection to non-instrinsically safe circuits with following maximum values: 0/4 … 20 mA U_m = 253 V AC

Communication circuit:	
RS232 connection (Bushing at lower part of housing) or	For connection to an RS232 interface U_m = 50 V
Ethernet connection (Bushing at lower part of housing)	For connection to an Ethernet interface U_m = 50 V
USB connection (MINI-USB bushing at lower part of housing)	For connection to a USB interface U_m = 16 V

Digital switch input circuits:	
Digital input 1: Connections KI1 [8, 12]	For connection to non-instrinsically safe circuits with following maximum values: Low level: U = -3 … +5 V DC High level: U = +11 … +30 V DC U_m = 36 V
Digital input 2: Connections KI1 [9, 12]	
Digital input 3: Connections KI1 [10, 12]	
Digital input 4: Connections KI1 [11, 12]	

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

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 VEGAMET 391 are not set up in dry and clean environments, they must be mounted in a housing with the required protection rating.

The controllers VEGAMET 391 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 category 1G/2G or category 1D/2D and are appropriately certified.

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