Safety instructions
VEGATOR 121, 122

Intrinsic safety
Installation in Zone 2
with output intrinsic safety "i"

UK CA 0891

Document ID: 1009316

Contents

Supplementary documentation:

- Operating Instructions VEGATOR 121, 122
- UK-Type Examination Certificate UL22UKEX2283X (Document ID: 1009317)
- UK Declaration of Conformity (Document ID: 66295)

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1 Area of applicability

These safety instructions apply to the devices:

- VEGATOR 121
- VEGATOR 122

According to UK-Type Examination Certificate UL22UKEX2283X (certificate number on the type label) and for all instruments with safety instruction 1009316.

The classification as well as the respective standards are stated in the above certificates:

Type of protection marking:

- II 3 (1) G Ex ec nC [ia Ga] IIC T4 Gc
- II 3 G (1) D Ex ec nC [ia IIIC Da] IIC T4 Gc
- II 3 G (M1) Ex ec nC [ia I Ma] IIC T4 Gc
- I (M1) [Ex ia Ma] I
- II (1) G [Ex ia Ga] IIC
- II (1) D [Ex ia Da] IIIC

2 Device configuration/-properties

The detailed device configurations can be retrieved using the serial number search on our homepage.

Move to " www.vega.com" and enter in the search field the serial number of your instrument.

Alternatively, you can find all via your smartphone:

- Download the VEGA Tools app from the " *Apple App Store*", " *Google Play Store*" or " *Baidu Store*"
- Scan the DataMatrix code on the type label of the instrument or
- Enter the serial number manually in the app

3 General information

The controllers VEGATOR 121, 122 are used for intrinsically safe power supply of two-wire transmitters, the reliable galvanic separation from all other circuits and the processing of analoguously transmitted measured data. The controllers VEGATOR 121, 122 depending on limit values are used for generation of binary output signals on the floating, non-contact relay output.

The controllers VEGATOR 121, 122 work in conjunction with 8/16 mA (current jump signal) limit switches and are mainly used for level detection or pump control for VEGASWING, VEGAVIB and VEGAWAVE vibrating level switches with electronics version "Two-wire". Hence simple control tasks can be solved.

Typical applications are monitoring functions such as overfill and dry run protections. The 8 mA/16 mA input signals and relay outputs or used for control and monitoring of levels. The single channel controllers VEGATOR 121.**X****, VEGATOR 121.**S**** (with additional fail safe relay in the output) are for connection of a current jump signal (8 mA/16 mA) sensor and the double channel controller VEGATOR 122 for connection of two current jump signal (8 mA/16 mA) sensors.

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

4 Application area, use in gas and dust atmospheres

Category 3G

The VEGATOR 121, 122 must be mounted and operated outside hazardous areas and inside hazardous areas zone 2.

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5 Special operating conditions

The following overview is listing all special properties of VEGATOR 121, 122, which make a labelling with the symbol "X" behind the certificate number necessary.

Ambient temperature
You can find the details in chapter " *Thermal data*" of these safety instructions.

Zone 2 applications
The device must be installed in a protective housing or a switching cabinet with IP54 according to EN 60079-0.

The device may only be used in an area with a minimum pollution level of 2 or better, as defined in EN 60664-1.

6 Safe operating mode

General operating conditions

- Do not operate the instrument outside the electrical, thermal and mechanical specifications of the manufacturer

Connection conditions

- The connection cable of VEGATOR 121, 122 has to be wired fix and in such a way that damages can be excluded
- If the temperature at the entry parts exceeds 70 °C, temperature-resistant connection cables must be used

7 Important information for mounting and maintenance

General instructions
The following requirements must be fulfilled for mounting, electrical installation, setup and maintenance of the instrument:

- The staff must be qualified according the respective tasks
- The staff must be trained in explosion protection
- The staff must be familiar with the respectively valid regulations, e.g. planning and installation acc. to EN 60079-14
- Make sure when working on the instrument (mounting, installation, maintenance) that there is no explosive atmosphere present, the supply circuits should be voltage-free, if possible.
- The instrument has to be mounted according to the manufacturer specifications, the UK-Type Examination Certificate and the valid regulations and standards
- Modifications on the instrument can influence the explosion protection and hence the safety, therefore repairs are not permitted to be conducted by the end user
- Modifications must only be carried out by employees authorized by VEGA company
- Use only approved spare parts
- Components for installation and connection not included in the approval documents are only permitted if these correspond technically to the latest standard mentioned on the cover sheet. They must be suitable for the application conditions and have a separate certificate. The special conditions of the components must be noted and if necessary, the components must be integrated in the type test. This applies also to the components already mentioned in the technical description.

Mounting
Keep in mind for instrument mounting

- Mechanical damage on the instrument must be avoided

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- Mechanical friction must be avoided

Maintenance
To ensure the functionality of the device, periodic visual inspection is recommended for:

- Secure mounting
- No mechanical damages or corrosion
- Worn or otherwise damaged cables
- No loose connections of the line connections, equipotential bonding connections
- Correct and clearly marked cable connections

Intrinsic safety "i"
- Observe the valid regulations for the interconnection of intrinsically safe circuits.
- The instrument is only suitable for connection to certified, intrinsically safe instruments
- 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 (EPL Da instruments) or 2D (EPL Db instruments) and are certified respectively

8 Electrical data

The VEGATOR 121, 122 include non-intrinsically safe circuits and one intrinsically safe circuit.

Non-intrinsically safe circuit

Supply circuit:	
Connection 16/17	U = 24 … 230 V AC (-15 … +10 %) U = 24 … 65 V DC (-15 … +10 %) U_m = 253 V AC

Relay outputs:	
10/11/12, 13/14/15	Maximum values: 253 V AC, 3 A 50 V DC, 1 A

Intrinsically safe circuit

Signal circuit:	
Connection 1/2, 4/5	Type of protection intrinsic safety Ex ia IIC, IIB, I
	Maximum values: U_o ≤ 22.4 V I_o ≤ 113.5 mA P_o ≤ 636 mW
	Characteristics: Linear
	The effective internal inductance L_i and capacity C_i are negligibly small.
	The max. values of the table can also be used as concentrated capacitances and concentrated inductances. The values for IIC and IIB are also permitted for explosive dust atmosheres.

Ex ia	L_o [mH]	58	20	0.5	0.2	0.1
	C_o [µF]	2	3.1	3.8	4.8	5.5

Ex ia IIC	L_o [mH]	1.9	1	0.5	0.2	0.1
	C_o [µF]	0.058	0.076	0.097	0.13	0.156

Ex ia IIB (IIIC)	L_o [mH]	16	10	5	0.5	0.2
	C_o [µF]	0.6	0.69	0.69	0.86	1.09

9 Thermal data

Permissible ambient temperatures

Permissible ambient temperature at the installation location of an instrument	-20 … +60 °C (-4 … +140 °F)

10 Installation

Controllers VEGATOR 121, 122 must be mounted and operated outside hazardous areas and inside hazardous areas zone 2. The protection rating of VEGATOR 121, 122 corresponds to IP20.

If the controllers VEGATOR 121, 122 are not set up in dry and clean environments, they must be mounted in a housing with the required protection rating.

With zone 2 applications, the following special conditions must be noted:

According to EN/IEC 60079-7, paragraph H.2 the following applies for this instrument:

- For EPL Gc applications the controllers VEGATOR 121 and VEGATOR 122 have to be installed in a suitable enclosure according to IEC 60079-7 resp. IEC 60079-15 in such a way that a degree of protection of a least IP54 is achieved.
- For EPL Gc applications the controllers VEGATOR 121 and VEGATOR 122 have to be erected in ausch a way that a pollution degree 2 or less, according to IEC 60664-1, is achieved.
- For EPL Gc applications the controllers VEGATOR 121 and VEGATOR 122, to provide a transient protection that ensures that the rated voltage, connected to the power supply terminals, is not exceeded by more than 40 %.
- The connecting and disconnecting of non-intrinsically safe circuits is only permitted in the absence of a potentially explosive atmoshere.

With zone 2 applications, the torque of the terminals should be between 0.5 Nm and 0.6 Nm.

The wire cross-section can be used between 0.2 mm^2 and 2.5 mm^2.

Stripping length is 7 mm.

The housing used must be labelled with the following warning:

WARNING – DO NOT SEPARATE WHEN ENERGIZED

WARNING – SEPARATE ONLY IN A NON-HAZARDOUS AREA

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.

If the intrinsically safe circuit is led into firedamp endangered areas of group I category M1 or M2, please make sure that the instruments connected to these circuits meet the requirements of category M1 (EPL Ma instruments) or M2 (EPL Mb instruments) and are certified respectively.

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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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