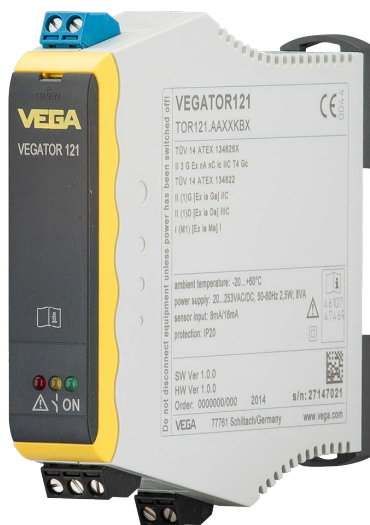




Safety instructions

VEGATOR 121, 122

Intrinsically Safe
Zone 2/DIV2



Document ID: 51455



VEGA

Contents

1	Area of applicability.....	3
2	General information.....	3
3	Technical data	3
4	Installation.....	4

Supplementary documentation:

- Operating Instructions VEGATOR 121, 122
- Certificate of Compliance CSA 70015644, (Document ID: 52169)

Editing status: 2018-12-04

1 Area of applicability

These safety instructions apply to the signal conditioning instruments VEGATOR TOR121**S/X****, TOR 122 according to the Certificate of Conformity CSA 70015644 (certificate number on the type label) and to all instruments with the number of the safety instruction (51455) on the type label.

2 General information

The signal conditioning instruments VEGATOR TOR121**S/X****, TOR 122 are used for intrinsically safe power supply of two-wire transmitters, the reliable galvanic separation from all other circuits and the processing of analogously transmitted measured data. The signal conditioning instruments VEGATOR TOR121**S/X****, TOR 122 depending on limit values are used for generation of binary output signals on the floating, non-contact relay output.

The signal conditioning instruments VEGATOR TOR121**S/X****, TOR 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 overflow 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 signal conditioning instruments VEGATOR TOR121.**X****, VEGATOR TOR121.**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 signal conditioning instrument VEGATOR TOR122 for connection of two current jump signal (8 mA/16 mA) sensors.

Signal conditioning instruments VEGATOR TOR121**S/X****, TOR 122 must be mounted and operated outside hazardous areas and inside hazardous areas zone 2 and Class I, Division 2.

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-protected systems must always be carried out by qualified personnel.

Ignition protection label:

Class I, Division 2, Groups A, B, C, D T4 provides IS outputs to Class I/II, Division 1, Groups ABCD/ EFG [Ex ia]

Ex nA nC ic [ia Ga] [ia IIIC Da] IIC T4 Gc

Class I, Zone 2, AEx nA nC ic [ia Ga] [ia IIIC Da] IIC T4 Gc

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

3 Technical data

The VEGATOR TOR121**S/X****, TOR 122 include non-intrinsically safe circuits and one intrinsically safe circuit.

Non-intrinsically safe circuits

Supply voltage: (connections KL16/17) U = 24 ... 230 V a.c. (-15 ... +10 %)

U = 24 ... 65 V d.c. (-15 ... +10 %)

U_m = 253 V AC

Relay outputs: (KL10/11/12, 13/14/15) Maximum values:

253 V AC, 3 A

50 V DC, 1 A

Intrinsically safe circuit

Signal circuit: (connections KL1/2, 4/5) Ignition protection type intrinsic safety Ex ia IIC, IIB

Maximum values:

$U_o \leq 22.4 \text{ V}$

$I_o \leq 113.5 \text{ mA}$

$P_o \leq 636 \text{ mW}$

Characteristics: linear

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 atmospheres.

Ex ia	IIC	IIB
Max. permissible external inductance L_o	0.5 mH	10 mH
Max. permissible external capacitance C_o	0.095 μF	0.55 μF

Application conditions

Permissible ambient temperatures

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

4 Installation

Signal conditioning instruments VEGATOR TOR121**S/X****, TOR 122 must be mounted and operated outside hazardous areas and inside hazardous areas zone 2. The protection rating of VEGATOR TOR121**S/X****, TOR 122 corresponds to IP 20.

If the signal conditioning instruments VEGATOR TOR121**S/X****, TOR 122 are not set up in dry and clean environments, they must be mounted in a housing with the required protection rating.

The apparatus shall be installed in an area of not more than Pollution Degree 2 as defined in IEC 60664-1.

For Zone 2 application, according to CSA/UL 60079-15, section 6.3.1, the following is valid for this apparatus:

- The apparatus has to be mounted in a housing tested according to CSA/UL/IEC 60079-0 that meets the requirements of degree of protection IP 54.
- or
- The apparatus has to be mounted in a housing tested according to CSA/UL/IEC 60079-0 that meets the requirements of degree of protection IP 4X. Then, the apparatus may exclusively be mounted in locations providing adequate protection against the entry of solid foreign objects or liquids.

For Division 2 outdoor application, this device shall be installed within a fixed end-use enclosure that provides a degree of protection Type 4. The suitability of the enclosure is subject to acceptance by the local authorities having jurisdiction at the time of installation.

The final end-use enclosure must bear the following warning marking both in French and English: "Do not connect or disconnect when an explosive atmosphere is present".

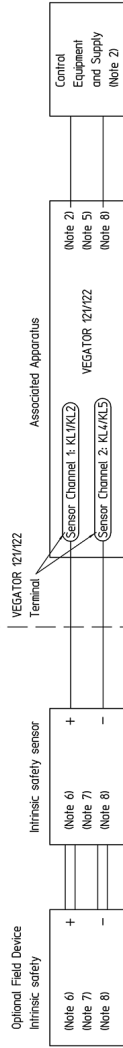
The degree of pollution of the area where the instrument is used must not exceed 2.

With zone 2 applications, the torque of the terminals should be between 0.4 Nm and 0.5 Nm.

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 zones 20 and 21 and are certified respectively.

Hazardous Location (Classified)
 Class 1, Zone 0, Group IIC
 Class 1, Division 1, Groups A, B, C and D
 and/or
 Zone 20, Group IIC
 Class II, Class III, Division 1, Groups E, F and G

Class I, Division 2, Groups A, B, C, D, T4, provides IS outputs to Class I/II, Division 1, Groups ABCD/IEFG (Ex ia)
 Ex nA nC i Ia Ga [la IIC Da] IIC T4, Gc
 Class I, Zone 2, AEX nA nC i Ia Ga [la IIC Da] IIC T4, Gc
 [Ex ia Ga] IIC [Ex ia Da] IIC



Non-intrinsically safe circuits

Supply voltage: (connections KL6/17)

$U = 24\text{--}230 \text{ V a.c. (-15\%...+10\%)}$
 $U = 24\text{--}65 \text{ V d.c. (-15\%...+10\%)}$
 $U_m = 253 \text{ V}$

Relay outputs: (KL10/11/12, 13/14/15)

Maximum values:
 $253 \text{ V a. c.}, 3 \text{ A}$
 $50 \text{ V d. c.}, 1 \text{ A}$

Intrinsically safe circuits

Signal circuit: (Connections KL12, 4/5)

Ignition protection type intrinsically safe Ex ia IIC, IB

Maximum values:
 $U_o/U_{oc} \leq 22.4 \text{ V}$
 $I_o/I_{oc} \leq 113.5 \text{ mA}$
 $P_o \leq 636 \text{ mW}$

Characteristics: linear

The values for IIC and IB are also permitted for explosive dust atmospheres.

The capacitance C_o and inductance L_o of the cables must be restricted to the following values:

Ex Ia	IIC	IB
Max. permissible external inductance L_o	0.5 mH	10 mH
Max. permissible external capacitance C_o	0.095 µF	0.55 µF

Notes:

- The Intrinsic Safety Entry Concept allows the interconnection of two intrinsically safe devices. FM Approved and CSA Certified entry parameters not specifically examined in combination as a system when:
 - Do or Vcc or V1 < Vmax, Io or Iic or Il < Imax, Co or Co > C1 + Cable, La or Lo > L1 + Cable, Pa < P1.
- Control equipment connected to the Associated Apparatus shall not use or generate more than 250 Vrms or Vdc.
- Division 1 installations should be in accordance with ANSI/ISA IEC60079-10 "Installation of Intrinsically Safe Systems for Hazardous (Classified) Locations" and the National Electrical Code (NFPA 70) or Canadian Electrical Code.
- For Division 1 installations, the configuration of associated apparatus shall be FM Approved/CSA Certified under Entry Concept.
- Field sensors/device manufacturer's installation drawing shall be followed when installing the equipment.
- The configuration of Field Device must be FM Approved/CSA Certified under Entry Concept.
- The Field Device manufacturer's installation drawing shall be followed when installing the equipment.
- No revision to drawing without prior Approval by FM Approvals and CSA International.

		Protektionsklasse / Schutzklasse IP65/IP67	Pressure / Atmosphärendruck max. 10 bar	Material / Werkstoff AlMgSi / AlMgSi	Material / Werkstoff AlMgSi / AlMgSi
Intrinsic safety		Ex ia IIC	Ex ia IIC	Ex ia IIC	Ex ia IIC
Intrinsic safety sensor		U _o /V _{oc} ≤ 22.4 V	I _o /I _{oc} ≤ 113.5 mA	P _o ≤ 636 mW	Characteristics: linear
Optional Field Device		U = 24–230 V a.c. (-15%...+10%)	U = 24–65 V d.c. (-15%...+10%)	U _m = 253 V	Relay outputs: (KL10/11/12, 13/14/15)
Intrinsic safety		U _o /V _{oc} ≤ 22.4 V	I _o /I _{oc} ≤ 113.5 mA	P _o ≤ 636 mW	Characteristics: linear
Intrinsic safety sensor		U _o /V _{oc} ≤ 22.4 V	I _o /I _{oc} ≤ 113.5 mA	P _o ≤ 636 mW	Characteristics: linear
Associated Apparatus		VEGATOR 121/22	VEGATOR 121/22	VEGATOR 121/22	VEGATOR 121/22
Control Equipment and Supply		Control Equipment and Supply	Control Equipment and Supply	Control Equipment and Supply	Control Equipment and Supply

Part No. / Teil-Nr.	Ordering Code / Bestell-Nr.	Material / Werkstoff
1	11	AlMgSi / AlMgSi
2	A3	AlMgSi / AlMgSi
3	1	AlMgSi / AlMgSi

Approved by FM and CSA
 FM Approved/CSA Certified under Entry Concept
 Ex ia IIC
 GE3933

VEGA
 GIBB Manufacturing, CSA
 VEGATOR 121/22
 A11K / A11No.
 Zeichn.-Nr. / Drawing No. GE3933
 A61
 A3
 1 1 1

MADE IN GERMANY
 VEGATOR 121, 122
 51455-EN-190109



Printing date:

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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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