Safety instructions
VEGATOR 111, 112

Intrinsically Safe

Zone 2/DIV 2

Document ID: 51454

Contents

Supplementary documentation:

- Operating Instructions VEGATOR 111, 112
- Certificate of Compliance CSA 70015644, (Document ID: 52169)

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51454-EN-190109

1 Area of applicability

These safety instructions apply to the signal conditioning instruments VEGATOR TOR111**S/X****, TOR 112 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 (51454) on the type label.

2 General information

The signal conditioning instruments VEGATOR TOR111**S/X****, TOR 112 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 signal conditioning instruments VEGATOR TOR111**S/X****, TOR 112 depending on limit values are used for generation of binary output signals on the floating, non-contact relay output.

The signal conditioning instruments VEGATOR TOR111**S/X****, TOR 112 work in conjunction with 1.2 mA/2.1 mA (NAMUR) 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 1.2 mA/2.1 mA input signals and relay outputs or used for control and monitoring of levels. The single channel signal conditioning instruments VEGATOR TOR111.**X****, VEGATOR TOR111.**S**** (with additional fail safe relay in the output) are for connection of a 1.2 mA/2.1 mA sensor and the double channel signal conditioning instrument VEGATOR 112 for connection of two 1.2 mA/2.1 mA sensors.

Signal conditioning instruments VEGATOR TOR111**S/X****, TOR 112 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 TOR111**S/X****, TOR 112 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
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)	In ignition protection type intrinsic safety Ex ia IIC Max. values per circuit: $U_o \leq 10.8$ V $I_o \leq 19.6$ mA $P_o \leq 52.8$ mW Characteristics: linear The max. values of the table can also be used as concentrated capacitances and concentrated inductances. The values for IIC are also permitted for explosive dust atmosheres.

Ex ia	IIC
Max. permissible external inductance L_o	5 mH
Max. permissible external capacitance C_o	0,65 µF

Application conditions
Permissible ambient temperatures

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

4 Installation

Signal conditioning instruments VEGATOR TOR111**S/X****, TOR 112 must be mounted and operated outside hazardous areas and inside hazardous areas zone 2. The protection rating of VEGATOR TOR111**S/X****, TOR 112 corresponds to IP 20.

If the signal conditioning instruments VEGATOR TOR111**S/X****, TOR 112 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".

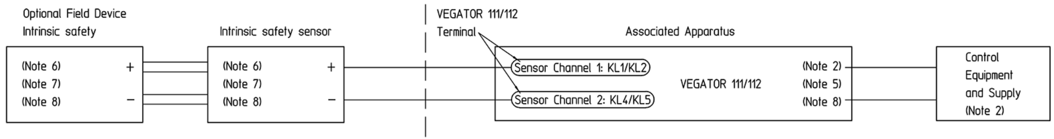
The degree of pollution of the area where the instrument is used must not exceed 2.

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 I, Division 1, Groups A, B, C and D
and/or
Zone 20, Group IIIC
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/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



Non-intrinsically safe circuits

Supply voltage: (connections KL16/17) U = 24…230 Va.c. (-15%…+10%)
U = 24…65 Vd.c. (-15%…+10%)
Um = 253 V

Relay outputs: (KL10/11/12, 13/14/15) Maximum values:
253V a. c., 3 A
50 V d. c., 1 A

Intrinsically safe circuit

Signal circuit: (connections KL1/2, 4/5) Ignition protection type intrinsic safety Ex ia IIC
Maximum values per circuit:
Uo/Voc ≤ 10.8 V
Io/Ioc ≤ 19.6 mA
Po ≤ 52.8 mW
Characteristics: linear
The values for IIC are also permitted for explosive dust atmospheres.

The capacidance Co and inductance Lo of the cables must be restriced to the following values:

Ex ia	IIC
Max. permissible external inductance Lo	5 mH
Max. permissible external capacitance Co	0.65 µF

Notes:

1. The Intrinsic Safety Entity concept allows the interconnection of two Intrinsically safe devices FM Approved and CSA Certified entity parameters not specifically examined in combination as a system when: Uo or Voc or Vt < Vmax, Io or Isc or It < Imax, Ca or Co > Ci + Ccable, La or Lo > Li + Lcable, Po < Pi.
2. Control equipment connected to the Associated Apparatus shall not use or generate more than 250 Vrms or Vdc.
3. Division 1 installations should be in accordance with ANSI/ISA RP12.06.01 "Installation of Intrinsically Safe Systems for Hazardous (Classified) Locations" and the National Electrical Code® (ANSI/NFPA 70) or Canadian Electrical Code.
4. For Division 1 installations, the configuration of associated Apparatus shall be FM Approved/CSA Certified under Entity Concept.
5. Field sensors/device manufacturer's installation drawing shall be followed when installing this equipment.
6. The configuration of Field Device must be FM Approved/CSA Certified under Entity Concept.
7. The Field Device manufacturer's installation drawing shall be followed when installing this equipment.
8. No revision to drawing without prior Approval by FM Approvals and CSA International.

Passmaß/tol.dimens. | Abmaß/allowance | Änderung / revision | Änd. Nr. ECN no. | Datum / Date | gezeichnet / freigegeben drawn / checked

Freimaßtoleranz general tolerance

Werkstoff / Material

	Datum/Date	Name/Name
gezeichnet drawn	13.03.2018	hochv
freigegeben checked	13.03.2018	hashemis

Maßstab Scale 1:1
Originalformat size of origin A3
Blatt / Sheet 1 von of 1

VEGA Grieshaber KG
Postfach 1142
77757 Schiltach
Germany

Benennung: Errichtungszeichnung: CSA VEGATOR 111/112
Description: Control Drawing: CSA VEGATOR 111/112
Art.Nr. / Art.No. GE3940
Zchngs.-Nr. / Drawing No. GE3940
Änd.-Zust. / Rev. -
Var.Fam.:
Var.Fam.2:
Teil ähnl. / sim. part
Ersatz f./replacement f.
Arb.Anw. / work.instr.
Alle Maße in mm !

Printing date:

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