

Safety instructions

MINITRAC MT31.DK*A/B/I/L ****

MINITRAC MT32.DK*A/B/I/L ****

BVS 10 ATEX E 096

⊕ II 2(1)G Ex d [ia Ga] IIC T6 Gb

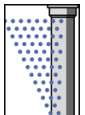
⊕ II 1D, 2(1)D Ex ta, tb [ia Da] IIIC T.. Da, Db IP 66



0044



40393



Contents

1	Area of applicability	4
2	General information	4
2.1	Category 2G instruments	4
2.2	Category 1D instruments	4
2.3	Category 2D instruments	4
3	Technical data	4
3.1	Electrical data	4
4	Application conditions	6
5	Protection against static electricity	6
6	Grounding	7
7	Material resistance	7
8	Mounting with external indicating unit VEGADIS 61 or VEGADIS 81	7
9	Ignition protection type flameproof enclosure Ex "d"	7
10	Flame proofing protection by housing Ex "t"	8
11	Type and size of the threads for the "Ex-d" cable entries	9

Please note:

These safety instructions are part of the documentation:

- 40447 - MINITRAC 31 - 4 ... 20 mA/HART - four-wire
- 43389 - MINITRAC 31 - 4 ... 20 mA/HART - four-wire with SIL qualification
- 37430 - MINITRAC 32 - 4 ... 20 mA/HART - four-wire
- 43908 - MINITRAC 32 - 4 ... 20 mA/HART - four-wire with SIL qualification
- 40346 - EC type approval certificate BVS 10 ATEX E 096

DE	Sicherheitshinweise für den Einsatz in explosionsgefährdeten Bereichen, verfügbar in den Sprachen deutsch, englisch, französisch und spanisch.
EN	Safety instructions for the use in hazardous areas are available in German, English, French and Spanish language.
FR	Consignes de sécurité pour l'utilisation en atmosphère explosible, disponibles dans les langues allemande, anglaise, française et espagnole.
ES	Instrucciones de seguridad para el empleo en áreas con riesgo de explosión, disponible en los siguientes idiomas alemán, inglés, francés y español.
CZ	Pokud nastanou potíže při čtení bezpečnostních upozornění v otisknutých jazycích, poskytneme. Vám na základě žádosti k dispozici kopii v jazyce Vaší země.
DA	Hvis De har sværet ved at forstå sikkerhedsforskrifterne på de trykte sprog, kan De få en kopi på Deres sprog, hvis De ønsker det.
EL	Εάν δυσκολεύεστε να διαβάσετε τις υποδείξεις ασφαλείας στις γλώσσες που ήδη έχουν τυπωθεί, τότε σε περίπτωση ζήτησης μπορούμε να θέσουμε στη διάθεσή σας ένα αντίγραφο αυτών στη γλώσσα της χώρας σας.
ET	Kui teil on raskusi trükitud keeltes ohutusnõuete lugemisega, siis saadame me teie järelpärimise peale nende koopia teie riigi keeles.
FI	Laitteen mukana on erikielisiä turvallisuusohjeita. Voit tilata meiltä äidinkielistet turvallisuusohjeet, jos et selviä mukana olevilla kielillä.
HU	Ha a biztonági előírásokat a kinyomtatott nyelveken nem tudja megfelelően elolvasni, akkor lépjen velünk kapcsolatba: azonnal a rendelkezésére bocsátunk egy példányt az Ön országhában használt nyelven.
IT	Se le Normative di sicurezza sono stampate in una lingua di difficile comprensione, potete richiederne una copia nella lingua del vostro paese.
LT	Jeį Jums sunku suprasti saugos nuorodų tekstą pateiktomis kalbomis, kreipkitės į mus ir mes Jums duosime kopiją Jūsų šalies kalba.
LV	Ja Jums ir problēmas drošības noteikumos lasīt nodrukātajās valodās, tad mēs Jums sniegsim pēc pieprasījuma kopiju Jūsu valsts valodā.
MT	F'kaz li jkollok xi diffikulta` biex tiffhem listruzzjonijiet ta` sigurta` kif ipprovduti, infurmana u ahna nibghatulek kopja billingwa tieghek.
NL	Als u moeite hebt met het lezen van de veiligheidsinstructies in de afgedrukte talen, sturen wij u op aanvraag graag een kopie toe in uw eigen taal.
PL	W przypadku trudności odczytania przepisów bezpieczeństwa pracy w wydrukowanych językach, chętnie udostępnimy Państwu kopię w języku obowiązującym w danym kraju.
PT	Caso tenha dificuldade de ler as instruções de segurança no idioma, no elas foram impressas, poderá solicitar junto a nós uma cópia em seu idioma.
SK	Pokiaľ nastanú problémy pri čítaní bezpečnostných pokynov vo vydaných jazykoch, poskytneme Vám na základe žiadosti k dispozícii kópiu v jazyku Vašej krajiny.
SL	Kadar se pojavijo težave pri branju varnostnih navodil v izdanih jezikih, vam bomo na osnovi zahtevka dali na razpolago kopijo v jeziku vaše države.
SV	Om du har problem att läsa säkerhetsanvisningarna på de här tryckta språken, ställer vi gärna på begäran en kopia på ditt språk till förfogande.

1 Area of applicability

These safety instructions apply to the radiation-based sensors MINITRAC MT31.DK*A/B/I/L****, MINITRAC MT32.DK*A/B/I/L**** according to EG type approval certificate BVS 10 ATEX E 096 with the 1. Supplement (certificate number on the type label) and to all instruments with the number of the safety instruction (40393) on the type label.

2 General information

The MINITRAC MT31.DK*A/B/I/L****, MINITRAC MT32.DK*A/B/I/L**** are suitable for use in hazardous atmospheres of all combustible materials of explosion group IIA, IIB and IIC for applications requiring instruments of category 2G.

The MINITRAC MT31.DK*A/B/I/L****, MINITRAC MT32.DK*A/B/I/L**** are suitable for use in areas with combustible, dust-generating bulk solids requiring instruments of category 1D or 2D.

If the MINITRAC MT31.DK*A/B/I/L****, MINITRAC MT32.DK*A/B/I/L**** are installed and operated in hazardous areas, the general Ex installation regulations EN 60079-14 as well as these safety instructions must be observed.

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

The installation of explosion-endangered systems must always be carried out by qualified personnel.

2.1 Category 2G instruments

The MINITRAC MT31.DK*A/B/I/L****, MINITRAC MT32.DK*A/B/I/L**** is installed in hazardous areas in areas requiring instruments of category 2G.

2.2 Category 1D instruments

The MINITRAC MT31.DK*A/B/I/L****, MINITRAC MT32.DK*A/B/I/L**** is installed in hazardous areas in areas requiring instruments of category 1D.

2.3 Category 2D instruments

The MINITRAC MT31.DK*A/B/I/L****, MINITRAC MT32.DK*A/B/I/L**** is installed in hazardous areas, in areas requiring instruments of category 2D.

3 Technical data

3.1 Electrical data

Non-intrinsically safe circuits (in the "Ex-d" connection compartment)

MINITRAC MT31.DK*A/B/I/L**, MINITRAC MT32.DK*A/B/I/L******

Voltage supply: (terminals 1[L1], 2[N])	U = 20 ... 253 V AC
	U = 20 ... 72 V DC
	U _m = 253 V

Relay circuit: (terminals 4[NC], 5[Common], 4[NO])	Maximum values: 253 V AC, 3 A, 500 VA 253 V AC, 1 A, 41 W
Current input: (terminals 12[In+], 13[In-])	I = 4 ... 20 mA
Digital input: (terminals 14[+100 mA], 15[+10 mA], 16[Common])	
Digital output: (terminals 17[Out+], 18[Out-])	
– Max. load current: floating transistor output	400 mA, 55 V DC
Multigauge Communication: (terminals 19[Serial out-], 20[Serial out+], 21[Serial in-], 22[Serial in+])	Communication circuit, only for communication with additional PROTRAC instruments

MINITRAC MT31.DK*A/I**, MINITRAC MT32.DK*A/I******

Signal circuit: (terminals 9[+active], 10[+passive], 11[common] in the "Ex-d" connection compartment)	I = 4 ... 20 mA with superimposed HART signal
---	---

Intrinsically safe circuits (in the "Ex-i" connection compartment)

MINITRAC MT31.DK*A/B/I/L**, MINITRAC MT32.DK*A/B/I/L******

Display and adjustment circuit: (terminals 5, 6, 7, 8 in the lateral chamber)	In ignition protection type intrinsic safety Ex ia IIC For connection to an intrinsically safe circuit of the associated external indicating unit VEGADIS 61/81 (PTB 02 ATEX 2136 X and BVS 05 ATEX E 023). The rules for the interconnection of intrinsically safe circuits between MINITRAC MT31.DK*A/B/I/L****, MINITRAC MT32.DK*A/B/I/L**** and the external indicating unit VEGADIS 61/81 are fulfilled, provided that the total inductance and total capacitance of the connection cable between MINITRAC MT31.DK*A/B/I/L****, MINITRAC MT32.DK*A/B/I/L**** and the external indicating unit VEGADIS 61/81 $L_{\text{cable}} = 100 \mu\text{H}$ and $C_{\text{cable}} = 3.4 \mu\text{F}$ are not exceeded. When using the delivered VEGA connection cable between MINITRAC MT31.DK*A/B/I/L****, MINITRAC MT32.DK*A/B/I/L**** and the external indicating unit VEGADIS 61/81, the following listed cable inductances L_i and cable capacitances C_i must be taken into account with a cable length ≥ 50 m. $L_i = 0.62 \mu\text{H/m}$ $C_{i \text{ wire/wire}} = 132 \text{ pF/m}$ $C_{i \text{ wire/screen}} = 208 \text{ pF/m}$ $C_{i \text{ screen/screen}} = 192 \text{ pF/m}$
---	---

Circuit of the display and adjustment module: In ignition protection type intrinsic safety Ex ia IIC (spring contacts in the lateral chamber) For connection to the indicating and adjustment module PLICSCOM or VEGACONNECT (PTB 07 ATEX 2013 X).

MINITRAC MT31.DK*B/L**, MINITRAC MT32.DK*B/L******

Intrinsically safe current output: (terminals 1[+], 2[-] in the lateral chamber) $I = 4 \dots 20$ mA with superimposed HART signal
 Maximum values:
 $U_o = 22.16$ V
 $I_o = 111.90$ mA
 $P_o = 620.03$ mW

Characteristics: linear
 The effective internal capacitance C_i is negligibly small.
 The effective internal inductance L_i is negligibly small.

	Ex ia IIC	Ex ia IIC	Ex ia IIB	Ex ia IIB
Permissible inductance L_o	1 mH	0.5 mH	5 mH	0.5 mH
Permissible capacitance C_o	0.08 μ F	0.098 μ F	0.58 μ F	0.65 μ F

4 Application conditions

The max. permissible ambient temperatures depending on the temperature classes are specified in the following table.

Category 2G instruments

Temperature class	Ambient temperature on the sensor
T6, T5, T4, T3, T2, T1	-40 ... +60 °C

Category 1D or 2D instruments

The max. surface temperature is limited by a temperature fuse to +98 °C.

The permissible ambient temperature is +60 °C.

5 Protection against static electricity

The MINITRAC MT31.DK*A/B/I/L****, MINITRAC MT32.DK*A/B/I/L**** in the version with chargeable plastic parts, as e.g. metal housing with inspection window or plastic detectors, is provided with a caution label referring to the safety measures that must be taken with regard to electrostatic charges during operation.



Caution: Plastic parts! Danger of static charge!

- Avoid friction
- No dry cleaning
- Do not mount in areas with flowing, non-conductive products

6 Grounding

For safety reasons, the radiation-based sensors type MINITRAC MT31.DK*A/B//L****, MINITRAC MT32.DK*A/B//L**** must be grounded. The external or internal ground connection terminal on the housing is used for this purpose.

7 Material resistance

The MINITRAC MT31.DK*A/B//L****, MINITRAC MT32.DK*A/B//L**** must only be used in media against which the materials of the wetted parts are sufficiently resistant.

8 Mounting with external indicating unit VEGADIS 61 or VEGADIS 81

The intrinsically safe signal circuit between MINITRAC MT31.DK*A/B//L****, MINITRAC MT32.DK*A/B//L**** and the external indicating unit VEGADIS 61 or VEGADIS 81 should be set up without grounding. The required insulation voltage is > 500 V AC. When using VEGA connection cable, this requirement is fulfilled. If grounding of the cable screen is required, it must be carried out according to EN 60079-14 paragr. 12.2.2.3.

9 Ignition protection type flameproof enclosure Ex "d"

The terminals for connecting to the operating voltage, i.e. signal circuits, are integrated in the connection compartment according to protection type flame-proof enclosure "d".

The thread gap between housing and cover is a flameproof gap.

The "Ex-d" connection compartment is provided with a M20 x 1.5 or ½-14 NPT thread for connecting to a certified "Conduit" system or for mounting an "Ex-d" cable gland certified according to EN 60079-1. Cable glands of simple construction may not be used. Please take note of section 13.1 and 13.2 of EN 60079-1. When connecting to a "Conduit" system, the corresponding seal must be located directly on the "Ex-d" connection compartment.

Unused openings must be sealed according to EN 60079-1.

A certified "Ex-d" cable gland is automatically supplied with the delivery. It is suitable for insertion of armoured or unarmoured cables depending on the ordered version. The instructions in the document accompanying the respective cable gland must be observed. The "Ex-d" cable gland must be screwed tightly into the housing. The supplied cable gland is suitable for the housing temperature

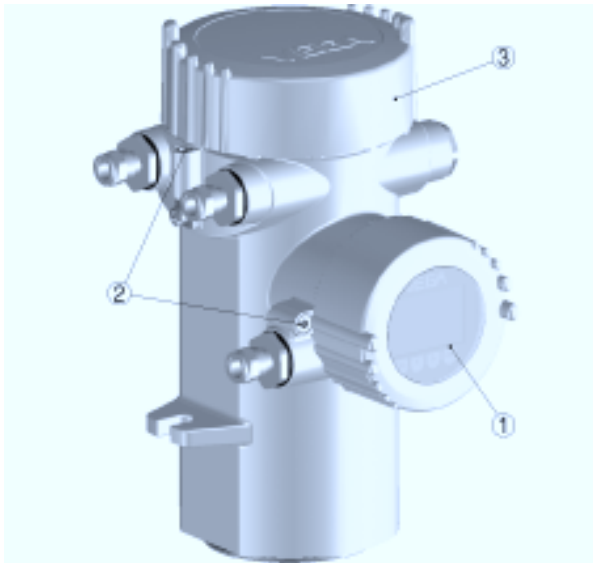
range mentioned in the MINITRAC MT31.DK*A/B//L****, MINITRAC MT32.DK*A/B//L**** specification. If a different cable gland is used, the separately certified cable gland or the temperature classes on the electronics determines the maximum permissible ambient temperature on the housing.

Before opening or in case the lid of the "Ex-d" connection compartment is open (e. g. during connection or service work), make sure that either the supply line is completely voltage free or no explosive atmosphere is present.

The connection cable to the "Ex-d" connection compartment must be sufficiently secured against damage and laid in conformity with EN 60079-14.

The cover of the "Ex-d" connection compartment must be screwed in completely before commissioning and secured by screwing out the lid locking screw all the way to the stop.

Double chamber housing with "Ex-d" connection compartment



- 1 "Ex-i" connection compartment
- 2 Locking screws of the cover
- 3 "Ex-d" connection compartment

Unused openings must be sealed according to EN 60079-1 section 11.9.

10 Flame proofing protection by housing Ex "t"

Before setup and application of the MINITRAC MT31.DK*A/B//L****, MINITRAC MT32.DK*A/B//L**** as explosion-proof instruments of category 1D or 2D, the two lids have to be screwed in to the stop and secured with the respective lid lock.

Cable entries must only be replaced by the same types or suitable cable entries/glands which are certified according to ATEX with at least IP 66.

The cable entry sent with the delivery is suitable for the housing temperature range specified in the MINITRAC MT31.DK*A/B//L****, MINITRAC MT32.DK*A/B//L**** certificate. If a different cable entry is used, the separately certified cable entry/gland determines the max. permissible ambient temperature on the housing.

11 Type and size of the threads for the "Ex-d" cable entries

The threads for mounting the "Ex-d" cable entries are of type M20 x 1.5 with MINITRAC MT31.DK*A/B//L*M**, MINITRAC MT31.DK*A/B//L*M**.

The threads for mounting the "Ex-d" cable entries are of type ½-14 NPT with MINITRAC MT31.DK*A/B//L*N**, MINITRAC MT31.DK*A/B//L*N**.



VEGA Grieshaber KG
Am Hohenstein 113
77761 Schiltach
Germany
Phone +49 7836 50-0
Fax +49 7836 50-201
E-mail: info.de@vega.com
www.vega.com



© VEGA Grieshaber KG, Schiltach/Germany 2013