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## GOVERNMENT APPROVED TEST LABORATORY

IN TERMS OF ARP 0108: "REGULATORY REQUIREMENTS FOR EXPLOSION PROTECTED APPARATUS"

# IA CERTIFICATE

Date Issued: **02 May 2023**
*Expiry date: **02 May 2026**

**Issue: 2**

## Ex – Type Examination Certificate

Certificate Number: **MS-XPL/15.1108 X**
Equipment: **Signal conditioning instruments**
Model / Type: **VEGATOR 111 type TOR111 .**S/X****;VEGATOR 112 type TOR112.*******
Applicant: **VEGA Grieshaber KG**
**Am Hohenstein 113, 77761 Schiltach**
**Germany**
Manufacturer: **VEGA Grieshaber KG**
Serial No: All serial numbers imported between issued- and expire date and all serial numbers covered by a valid report or acceptable product certification mark.

Supplied by
**VEGA Grieshaber KG**
Identified by Inspection Authority number
**MS-XPL/15.1108 X**

And as described in the Explolabs file number **XPL/16650/15.1108 Issue 2** is hereby certified "Explosion Protected (Refer to clause 1, for Ex Rating)", having been examined and inspected in accordance with the relevant requirements of South African Standards.

| | |
|---|---|
| **SANS 60079-0: 2019 Ed 6**<br>**IEC 60079-0: 2017 Ed 7** | Explosive atmospheres Part 0: Equipment — General requirements |
| **SANS 60079-7: 2019 Ed 4**<br>**IEC 60079-7:2015 Ed 5** | Explosive atmospheres Part 7: Equipment protection by increased safety "e" |
| **SANS 60079-11: 2012 Ed 4**<br>**IEC 60079-11: 2011 Ed 6** | Explosive atmospheres Part 11: Equipment protection by intrinsic safety "i" |
| **SANS 60079-15: 2022 Ed 5**<br>**IEC 60079-15: 2017 Ed 5** | Explosive atmospheres Part 15: Equipment protection by type of protection "n" |

Risk of ignition provided:

| Protection afforded | Equipment Protection Level (EPL) Group | Performance of protection | Conditions of operation | T class or Max Surface Temp (°C) |
|---|---|---|---|---|
| Very high | [Ma] Group I | Two independent means of protection or safe even when two faults occur independently of each other | Equipment remains functioning when explosive atmosphere present | *Not applicable* |
| Very high | [Ga] Group II | | Equipment remains functioning in zones 0, 1 and 2 | |
| Very high | [Da] Group III | | Equipment remains functioning in zones 20, 21 and 22 | |
| Enhanced | Gc Group II | Suitable for normal operation | Equipment remains functioning in zone 2 | T4 (135°C) |

This certificate supersedes all previous documents bearing the reference no XPL/16650/15.1108 Issue 1.

## 1. GENERAL

The marking of the Signal conditioning instruments shall include the following:

| | |
|---|---|
| | Ex ec nC [ia Ga] IIC T4 Gc |
| | Ex ec nC [ia IIIC Da] IIC T4 Gc |
| VEGATOR 111 type TOR111 .**S/X**** | Ex ec nC [ia I Ma] IIC T4 Gc |
| VEGATOR 112 type TOR112.******* | [Ex ia Ma] I |
| | [Ex ia Ga] IIC |
| | [Ex ia Da] IIIC |

**Description of product:**

The signal conditioning instruments VEGATOR 111 type TOR111 .**S/X**** and VEGATOR 112 type TOR112.******* are used for the supply of passive, intrinsically safe 1.2 mA/2.1 mA two wire NAMUR measuring sensors, the safe galvanic separation of the intrinsically safe circuits from all non-intrinsically safe circuits and the evaluation of the analogue transmitted measuring data.

**Electrical data:**

| | |
|---|---|
| Supply<br>(Terminals 16/17) | For connection to non-intrinsically safe circuits with the following maximum values:<br>$U_n$ = 24...230 V a.c (-15 … +10%)<br>$U_n$ = 24… 65 V d.c (-15 … +10%)<br>$U_m$ = 253 V a.c |
| Relay outputs<br>(Terminals<br>Relay 1: 10/11/12<br>Relay 2: 13/14/15) | For connection to non-intrinsically safe circuits with the following maximum values:<br>$U_n$ = 253 V a.c; $I_n$ = 3 A<br>$U_n$ = 60 V d.c; $I_n$ = 1 A |
| Signal circuits<br>(Terminals 1/2, 4/5) | In type of protection intrinsic safety Ex ia I/IIC/IIB(IIIC)<br>With following maximum values per circuit:<br>$U_o$ = 10.8 V<br>$I_o$ = 19.6 mA<br>$P_o$= 52.8 mW<br>Characteristic line: linear |
| Effective internal capacitance Ci | Negligibly small |
| Effective internal inductance Li | 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] | 100 | 50 | 5 | 0.5 | 0.1 |
| | $C_o$ [µF] | 12 | 13 | 19 | 35 | 58 |

| Ex ia IIC | | | | | | |
|---|---|---|---|---|---|---|
| | $L_o$ [mH] | 100 | 20 | 10 | 0.5 | 0.05 |
| | $C_o$ [µF] | 0.33 | 0.55 | 0.63 | 1.1 | 2.1 |

| Ex ia IIB (IIIC) | | | | | | |
|---|---|---|---|---|---|---|
| | $L_o$ [mH] | 100 | 20 | 10 | 0.5 | 0.05 |
| | $C_o$ [µF] | 3 | 3.9 | 4.4 | 8.3 | 15 |

The intrinsically safe signal circuit is safe galvanically separated from the non-intrinsically safe circuits up to a peak value of the voltage of 375 V.

**Thermal data:**

Permissible ambient temperature range: -20 °C < Ta < +60 °C.

Drawings and documents are listed in the ATEX Assessment Report No. 21 203 296739

Based on the following documentation: TÜV 14 ATEX 133904 X Issue 00

## 2. INSTALLATION INSTRUCTIONS

It is the manufacturer's responsibility to supply installation instructions with each unit offered for sale as required by IEC/SANS 60079-0 Clause 30.

**3. SPECIAL CONDITIONS FOR SAFE USE** *(denoted by "X" after certificate number)*

i. For EPL Gc applications the signal conditioning instruments VEGATOR 111 type TOR111 .**S/X**** and VEGATOR 112 type TOR112.******* have to be installed in a suitable enclosure according to EN 60079-7 resp. EN 60079-15 in such a way that a degree of protection of at least IP54 is achieved.

ii. For EPL Gc applications the signal conditioning instruments VEGATOR 111 type TOR111 .**S/X**** and VEGATOR 112 type TOR112.******* have to be erected in such a way that a pollution degree 2 or less, according to EN 60664-1, is achieved.

iii. For EPL Gc applications measures have to be taken, external to the signal conditioning instruments VEGATOR 111 type TOR111 .**S/X**** and VEGATOR 112 type TOR112.*******, to provide a transient protection that ensures that the rated voltage, connected to the power supply terminals, is not exceeded by more than 40 %.

iv. For EPL Gc applications the connecting and disconnecting of non-intrinsically safe circuits is only permitted in the absence of a potentially explosive atmosphere.

**4. SCHEDULE OF LIMITATIONS** *(denoted by "U" after certificate number)*

Not applicable.

**5. CONDITIONS OF CERTIFICATION**

All production units must be covered by a QAN (Quality Assurance Notification), Product Mark Scheme or batch evaluation.

**6. MARKING**

The following (or similar) information have to be clearly and permanently marked on all units:

| | |
|---|---|
| Supplier | : VEGA Grieshaber KG |
| Manufacturer | : VEGA Grieshaber KG |
| Equipment | : Signal conditioning instruments |
| Model/Type | : VEGATOR 111 type TOR111 .**S/X****;VEGATOR 112 type TOR112.******* |
| Serial No. | : --- |
| Ex Rating | : See General, clause 1 for detail. |
| IA Certificate No | : MS-XPL/15.1108 X |

*This certification indicates compliance with R10.1 of the Mines Health and Safety Act and/or EMR 9(2) of the Occupational Health and Safety Act, provided that the apparatus is used as relevant in accordance with:*

ii) SANS 10086 and IEC/SANS 61241-14 requirements as applicable;
iii) Any conditions mentioned in the above report;
iv) Any relevant requirements and codes of practice enforced in terms of the Mine Health and Safety Act or Occupational Health and Safety Act; and
v) Any restrictions and conditions enforced by the Chief Inspector of Mines or the Principal Inspector or the Chief Inspector: Occupational Health and Safety.
vi) A revision certificate replaces all previous version of the certificate.
vii) * - Only covers equipment Imported between the "Issued" and "Expire" dates.
viii) If and when your QAN (Quality Assurance Notification) Certificate for your equipment manufacturer expires during the valid period of the IA Certification (issued for your equipment) and a new certificate is not submitted the existing IA Certification will then be cancelled. It is thus the client's responsibility to always submit the updated and valid QAN certificate(s) to Explolabs (Pty) Ltd

**Responsible Testing Officer:**

**D Maree**
**Technical Specialist**
***EXPLOLABS EXPLOSION PREVENTION SERVICES***