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GOVERNMENT APPROVED TEST LABORATORY

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

IA CERTIFICATE

Date Issued: **20 Feb 2025**
 *Expiry date: **20 Feb 2028**
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Issue: 7

Ex – Type Examination Certificate

Certificate Number: **MS-XPL/10.0679 X**
 Equipment: **Signal conditioning instrument**
 Model / Type: **VEGAMET 391**
 Applicant: **VEGA Grieshaber KG**
Am Hohenstein 113
77761 Schiltach
Germany
 Manufacturer: **VEGA Grieshaber KG**
Am Hohenstein 113, 77761 Schiltach, Germany
 Manufacturing locations: **India VEGA India Level and VEGA Americas, Inc.**
Pressure Measurement Pvt. Ltd. 3877 Mason Research Parkway
Plot No. 1, Gat No. 181 Ohio
Village - Phulgaon, Tal. Haveli Mason 45036
Pune 412216 United States of America
India
 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/10.0679 X

And as described in the Explolabs file number **XPL/11380/10.0679** is hereby certified "Explosion Protected (Refer to clause 1. for Ex Rating)", having been examined and inspected in accordance with the relevant requirements of the South African National Standards.

- SANS 60079-0: 2019 Ed 6** Explosive atmospheres Part 0: Equipment — General requirements
- IEC 60079-0: 2017 Ed 7**
- SANS 60079-11: 2012 Ed 4** Explosive atmospheres Part 11: Equipment protection by intrinsic safety "i"
- IEC 60079-11: 2011 Ed 6**

Risk of ignition provided:

Protection afforded	Equipment Protection Level (EPL)	Performance of protection	Conditions of operation	T class or Max Surface Temp (°C)
	Group			
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	

This report supersedes all previous documents bearing the reference no XPL/11380/10.0679 Issue 6.

DOCUMENT No: XPL0213	RELEASE DATE: 30/01/2024	REV: 8
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1. GENERAL

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

[Ex ia Ma] I or
[Ex ia Ga] IIC or
[Ex ia Da] IIIC

General product information:**Description:**

The signal conditioning instrument VEGAMET 391 is used for the safe galvanic separation of the intrinsically safe circuit from all non-intrinsically safe circuits.

The apparatus supplies passive, intrinsically safe 0/4-20 mA two wire measuring value transducers and transforms the signals of the transducers into a normalized 0/4-20 mA output signal.

The output signal, the relay outputs and the communication via the digital interfaces are used for the control and monitoring of filling levels.

Electrical data:

Supply voltage
(Connections K13[25, 26])

For connection to non-intrinsically safe circuits with following maximum values:

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

$U = 24 \dots 230$ V a.c. (-15...+10%)

$U_m = 253$ V a.c.

Supply and signal circuit
(Connections K11[1, 2])

In type of protection Intrinsic Safety Ex ia I/IIC/IIB(IIIC) with following maximum values:

$U_o = 24.2$ V

$I_o = 110$ mA

$P_o = 662$ mW

Characteristic line: linear

Effective internal capacitance C_i

Negligibly small

Effective internal inductance L_i

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	Lo [mH]	60	20	1	0.2	0.1
	Co [µF]	1.8	2.5	2.8	4.3	4.5

Ex ia IIC	Lo [mH]	1.6	1	0.5	0.2	0.1
	Co [µF]	0.052	0.066	0.086	0.12	0.122

Ex ia IIB (IIIC)	Lo [mH]	17	1	0.5	0.2	---
	Co [µF]	0.55	0.63	0.75	0.91	---

With additionally connected VEGA interface converter VEGACONNECT type CONNECT.CX** via HART-connecting cable (IECEx PTB 20.0007X or PTB 07 ATEX 2013 X).
(Connections K11[3, 4])

Supply and signal circuit
(Connections K11[1, 2])

In type of protection intrinsic safety Ex ia I/IIC/IIB(IIIC) with following maximum values:

$U_o = 24.2$ V

$I_o = 113.7$ mA

$P_o = 668$ mW

Characteristic line: linear

Effective internal capacitance C_i

Negligibly small

Effective internal inductance L_i

Negligibly small

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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	Lo [mH]	56	20	1	0.5	0.1
	Co [μ F]	1.8	2.5	2.8	3.3	4.5

Ex ia IIC	Lo [mH]	1.4	1	0.5	0.2	0.1
	Co [μ F]	0.054	0.065	0.085	0.12	0.122

Ex ia IIB (IIIC)	Lo [mH]	15	1	0.5	0.2	---
	Co [μ F]	0.55	0.63	0.75	0.91	---

Relay circuits

(Relay output 1:

Connections KI3 [31, 32, 33]

relay output 2:

Connections KI3 [34, 35, 36]

relay output 3:

Connections KI2 [13, 14, 15]

relay output 4:

Connections KI2 [16, 17, 18]

relay output 5:

Connections KI2 [19, 20, 21]

relay output 6:

Connections KI2 [22, 23, 24])

Current output

(Connections KI3 [28, 29])

For connection to non-intrinsically safe circuits with following maximum values per relay:

a. c. current: 253 V; 2 A; 125 VA

d. c. current: 60 V; 1 A; 54 W

For connection to non-intrinsically safe circuits with following maximum values:

0/4 ... 20 mA

$U_m = 253$ V a.c.

Communication circuit

RS232 connection

(Bushing at lower part of housing

or

Ethernet connection

(Bushing at lower part of housing)

USB connection

(MINI USB bushing at lower part of housing)

Digital switch input circuits

(Digital input 1:

connections KI1 [8, 12]

Digital input 2:

connections KI1 [9, 12]

Digital input 3:

connections KI1 [10, 12]

Digital input 4:

connections KI1 [11, 12])

For connection to a RS232 interface

$U_m = 50$ V

For connection to an Ethernet interface

$U_m = 50$ V

For connection to an USB interface

$U_m = 16$ V

For connection to non-intrinsically safe circuits with following maximum values:

Low level: $U = -3$ V ... +5 V d.c.

High level: $U = +11$ V ... +30 V d.c.

$U_m = 36$ V

The intrinsically safe supply and 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 during operation: -20 °C $\leq T_a \leq +60$ °C

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Details of change (applicable only when revising an existing EXTR package):

- Proof of conformity of the signal conditioning instrument VEGAMET 391 to IEC 60079-0:2017 and IEC 60079-11:2011
- Additional manufacturing location added.
- With additionally connected VEGA interface converter VEGACONNECT type CONNECT.CX** via HART-connecting cable, the electrical output data of the intrinsically safe supply and signal circuit are incorrectly given in the previous issues No.0 and 1 of the certificate of conformity IECEx TUN 09.0006, therefore these data are no longer valid and are to be replaced by the values in this issue No.2 of the certificate of conformity IECEx TUN 09.0006X. The supply voltage has also been corrected.
- The external inductance L_o and the external capacitance are C_o are determined only by using the program ispark, version 7.1 from 2015-07-03 copyright @ PTB 2002

This results that the certificate is marked with the sign "X" after the certificate number.

Note that the signal conditioning instrument VEGAMET MET391.C**** is named in this issue No. 2 as VEGAMET 391

Based on the following documentation:

IECEx TUN 09.0006X Issue No. 2 and/or TÜV 09 ATEX 555127 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)*

With additionally connected VEGA interface converter VEGACONNECT type CONNECT.CX** via HART-connecting cable, the electrical output data of the intrinsically safe supply and signal circuit are incorrectly given in the previous EC-Type Examination Certificate IECEx TUN 09.0006 or TÜV 09 ATEX 555127 and its supplement, therefore these data are no longer valid and are to be replaced by the values in this issue 00 of the EU-Type Examination Certificate IECEx TUN 09.0006X or TÜV 09 ATEX 555127 X.

The supply voltage has also been corrected.

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.

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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 instrument
 Model/Type : VEGAMET 391
 Serial No. : ---
 Ex Rating : [Ex ia Ma] I or
 [Ex ia Ga] IIC or
 [Ex ia Da] IIIC
 IA Certificate No : MS-XPL/10.0679 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:

- i) SANS 10086 and IEC/SANS 61241-14 requirements as applicable;
 - ii) Any conditions mentioned in the above report;
 - iii) Any relevant requirements and codes of practice enforced in terms of the Mine Health and Safety Act or Occupational Health and Safety Act; and
 - iv) Any restrictions and conditions enforced by the Chief Inspector of Mines or the Principal Inspector or the Chief Inspector: Occupational Health and Safety.
- A revision certificate replaces all previous version of the certificate.
- v) - Only covers equipment imported between the "Issued" and "Expire" dates.
 - vi) 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 Explotabs (Pty) Ltd
 - vii)

Reviewed by:



CC Lourens
Technical Specialist

EXPLOLABS EXPLOSION PREVENTION SERVICES

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