EXPLOLABS Explosion Prevention Services (Pty) Ltd
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GOVERNMENT APPROVED TEST LABORATORY

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

IA CERTIFICATE

Date Issued: **14 Dec 2023**
*Expiry date: **14 Dec 2026**

Issue: 1

Ex – Type Examination Certificate

Certificate Number:	**S-XPL/23.1619 X**
Equipment:	**Industrial Controllers**
Model / Type:	**VEGAMET 141(*), VEGAMET 142(*)**
Applicant:	**VEGA Grieshaber KG** **Am Hohenstein 113** **77761 Schiltach** **Germany**
Manufacturer:	**VEGA Grieshaber KG**
Manufacturing location:	**VEGA Americas, Inc.** **3877 Mason Research Pkwy,** **Mason,** **OH 45036,** **United States of America**
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
S-XPL/23.1619 X

And as described in the Explolabs file number **XPL/23956/23.1619** 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 **IEC 60079-0: 2017 Ed 7**	Explosive atmospheres Part 0: Equipment — General requirements
SANS 60079-11: 2012 Ed 4 **IEC 60079-11: 2011 Ed 6**	Explosive atmospheres Part 11: Equipment protection by intrinsic safety "i"

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	Ga Group II	Two independent means of protection or safe even when two faults occur independently of each other	Equipment remains functioning in zones 0, 1 and 2	N/A
Very high	Da Group III	Two independent means of protection or safe even when two faults occur independently of each other	Equipment remains functioning in zones 20, 21 and 22	N/A

1. GENERAL

The marking of the Industrial Controllers shall include the following:
[Ex ia Ga] IIC
[Ex ia Da] IIIC
-20 °C ≤ Ta ≤ +60 °C

The controller VEGAMET 141(*)/ 142(*) series are industrial controllers designed for use in indoor applications as associated apparatus permitted to be installed in non-hazardous location only.

They are able to supply up to two sensors with an intrinsically safe circuit (Ex ia) and can process and display their measurement values through a 4…20 mA input.

Up to two current outputs can be used for data transmission to other control equipment or external indicating instruments and up to 3 relay outputs can be used to operate equipment.

The devices can be operated via pushbutton or remotely using smartphone/ tablet and PC/Laptop using Bluetooth Smart, which is a limited energy Bluetooth communication.

The measured value is shown on a display.

No further interfaces are available on the controller.

TYPE DESIGNATION

Safety relevant model coding of VEGAMET 140 series:

VEGAMET	*a*	*b*	*c*	*(*)*
	1	Housing for the installation in the control cabinet (indoor)		
		4	Basic function, for simple control tasks	
			1	Single channel version, for use with one sensor
			2	Dual channel version, for use with one or two sensors

The placeholder within brackets (VEGAMET 14x(*)) is reserved and considered as not safety relevant. It is for internal production control without effect on the product construction.

Safety relevant features	**VEGAMET 141(*)**	**VEGAMET 142(*)**
Number of 4…20 mA sensor inputs Ex ia	1	2
Number of digital inputs	-	-
Number of 0/4…20 mA current outputs	1	2
Number of relay outputs	3	3
Bluetooth communication	Yes	Yes

PARAMETERS RELATING TO THE SAFETY

ELECTRICAL RATINGS:

VEGAMET 141(*), VEGAMET 142(*)

Power supply: Nominal range: (terminals 91, 92)	24 V ... 65 V DC; 3 W (141), 4 W (142) 100 V … 230 V AC; 50/60 Hz; 10 VA (141), 12 VA (142) Um = 253V AC for [Ex ia] only
Ambient temperature range:	-20 °C ≤ Tamb ≤ +60 °C
Protection rating:	IP20 (IEC 60529)
Relay output maximum values: (terminals 61 to 69)	1A AC (cos phi > 0.9), 250VAC, 250 VA 1A DC, 60V DC, 40 W Um = 253V AC for [Ex ia] only

Current output: (terminals 41, 42 [VEGAMET 141(*)]) (terminals 41 to 44 [VEGAMET 142(*)])	0/4…20 mA U ≤ 16 V Load = max. 500 Ω Um = 253V AC for [Ex ia] only
Communication interface:	Bluetooth
Sensor input circuit:	4…20 mA
(terminals 1, 2, 1HART [VEGAMET 141(*)]) (terminals 1, 2, 1HARt or 4, 5, 2HART [VEGAMET 142(*)])	Maximum values of the intrinsically safe signal circuit: Uo ≤ 23.3 V Io ≤ 109.8 mA Po ≤ 639.6 mW Characteristic: linear Ci is negligibly small Li is negligibly small

The maximum values in the table may be used as concentrated capacitances and concentrated inductances.

Ex ia	IIC		IIB, IIIC		IIA
Permissible external inductance Lo	0.2 mH	0.5 mH	0.5 mH	2 mH	10 mH
Permissible external capacitance Co	120 nF	88 nF	580 nF	470 nF	770 nF
Permissible outer Lo/Ro -ratio	55 µH/Ohm	55 µH/Ohm	221 µH/ Ohm	221 µH/ Ohm	443 µH/ Ohm

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

The maximum voltage at the non-intrinsically safe circuits must not exceed 253Vrms in the event of a fault. VEGAMET 140 series have intrinsically safe circuits and non-intrinsically safe circuits.

ROUTINE EXAMINATIONS AND TESTS

Transformer TR101 and TR201 shall be subjected to a voltage of 2500 V rms between primary and secondary windings, for at least 60 seconds, in accordance with the requirements of Clause 11.2 of IEC 60079-11. Alternatively, the test may be carried out at 1.2 times the test voltage, but with a reduced duration of at least 1 second.

Based on the following documentation: IECEx ULD 20. 0028X Issue: 0

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)*

The installation orientation of the device must be in accordance with the instructions.

The installer must also ensure that the rated ambient temperature range of the equipment is not exceeded when installed in an enclosure with other equipment and that sufficient separation is provided around the device.

The service sockets 1HART, 2HART are parallel to the intrinsically safe output terminals 1,2 or 4,5 – see instructions.

4. CONDITIONS OF CERTIFICATION

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

5. 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	: Industrial Controllers
Model/Type	: VEGAMET 141(*), VEGAMET 142(*)
Serial No.	: ---
Ex Rating	: [Ex ia Ga] IIC [Ex ia Da] IIIC -20 °C ≤ Ta ≤ +60 °C
IA Certificate No	: S-XPL/23.1619 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.
v) A revision certificate replaces all previous version of the certificate.
vi) * - Only covers equipment Imported between the "Issued" and "Expire" dates.
vii) 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

GOVERNMENT APPROVED INSPECTION AUTHORITY

Mining And Surface Certification (Pty) Ltd

2015/021934/07

THIS CERTIFICATE IS ISSUED AS AN I.A. CERTIFICATE IN TERMS OF THE RELEVANT REGULATIONS OF THE MINERALS ACT (INCORPORATING THE MINE HEALTH AND SAFETY ACT) AND THE ELECTRICAL MACHINERY REGULATIONS OF THE OCCUPATIONAL HEALTH AND SAFETY ACT.

IA CERTIFICATE	MASC S/20-9005X	**Issue**	0
Issue Date	27 January 2021	**Expiry Date**	27 January 2024
**** Based on Certificate No**	IECEx ULD 20.0028X	**Issue / Variations / Amendment**	0
Requested by	VEGA Grieshaber KG, Am Hohenstein 113, 77761 Schiltach, Germany		
Manufacturer	VEGA Grieshaber KG, Am Hohenstein 113, 77761 Schiltach, Germany	VEGA Americas, Inc 4241 Allendorf Drive, Cincinnati, Ohio 45209, United States of America	
Description	The controller VEGAMET 141(*)/ 142(*) series are industrial controllers designed for use in indoor applications as associated apparatus permitted to be installed in non-hazardous location only. They are able to supply up to two sensors with an intrinsically safe circuit (Ex ia) and can process and display their measurement values through a 4…20 mA input. Up to two current outputs can be used for data transmission to other control equipment or external indicating instruments and up to 3 relay outputs can be used to operate equipment. The devices can be operated via pushbutton or remotely using smartphone/ tablet and PC/Laptop using Bluetooth Smart, which is a limited energy Bluetooth communication. The measured value is shown on a display. No further interfaces are available on the controller. Refer to Annex B below for more details.		
Equipment	Industrial Controllers	**Type**	VEGAMET 141(*), VEGAMET 142(*)
MARKING: **Original marking as per certificate ** remains applicable.** **IA number must be added.**	**Type:** **Ex Marking:** **IA Number:** **Warnings:**	VEGAMET 141(*), VEGAMET 142(*) [Ex ia Ga] IIC [Ex ia Da] IIIC -20 °C ≤ Ta ≤ +60 °C MASC S/20-9005X (To be additionally marked on equipment) See Base Certificate ** (original marking must be applied)	
Quality Assurance report (QAR) / Notification (QAN) Expiry date:	DE/TUN/QAR06.0002/10		

Compliance:

The equipment as described above has been allocated the rating Explosion Protected [Ex ia Ga] IIC, [Ex ia Da] IIIC, -20 °C ≤ Ta ≤ +60 °C utilizing the SANS/IEC Standards:

- SANS (IEC) 60079-0: 2019 (2017) Equipment - General requirements
- SANS (IEC) 60079-11: 2012 (2011) Equipment protection by Intrinsic Safety 'i'

Special conditions of safe use "X":

- The installation orientation of the device must be in accordance with the instructions.
- The installer must also ensure that the rated ambient temperature range of the equipment is not exceeded when installed in an enclosure with other equipment and that sufficient separation is provided around the device.
- The service sockets 1HART, 2HART are parallel to the intrinsically safe output terminals 1,2 or 4,5 – see instructions.

Conditions of manufacture:

- No additional conditions as may be applicable for the base certificate **

Terine Orsmond
PROJECT MANAGER

Regardt Zeelie
TECHNICAL SPECIALIST

This certificate covers all units sold as long as the QAR/QAN remains valid.
According to the relevant requirements of the MHS Act and the OHS Act, production units of explosion protected equipment are required to comply with third party quality assurance (an approved mark scheme or batch testing by an accredited test laboratory).

Apparatus in hazardous locations is subject to the following provisions as applicable, which shall be adhered to:
SANS 10086 requirements;
Any conditions mentioned in the above report
Any restrictions and conditions enforced by the chief inspector of mines or chief inspector of factories
Any relevant requirements of the MHS Act.

Mining And Surface Certification (Pty) Ltd
Unit 5 Lelyta Park, 45 Jurg Ave, Hennopspark Ext 87
Centurion, 0157

ANNEX A

This document is based on and must be read in conjunction with certificate IECEx ULD 20.0028X	
Description (According to Base Certificate **)	
"Refer to description in Base Certificate ** (and any applicable schedules/issues/variations)."	
Standard compliance	See Base Certificate **
Special conditions of safe use ("X")	• As above
Conditions of manufacture	• As above
Conditions of Certification	• This IA Certificate covers all units sold from the date of this document to the expiry date of this certificate. • As per ARP 0108 a maximum three yearly review is required on this IA Certificate (expiry is determined as per the QAR/QAN/QMS expiry date). • The apparatus must be additionally marked with the MASC marking details above. • This approval only covers the equipment as certified above and does not include any scheduled additions or variations / amendments / new issues to the certificate(s), made after the above date. • The equipment does not need to be re-tested when used on the conditions and with such restrictions as prescribed by the certificate on which this IA Certificate is based and any other conditions in this IA Certificate. • The certification on which this IA Certificate is based must remain valid. • The extent of the requirements in the ARP 0108 (or regulations), SANS 10108 and any other applicable regulations on the certification of the equipment must remain unchanged. • The Ex quality assurance notification/report for the equipment must remain valid.
Conclusion:	• From the above and the selective examination of the documentation, nothing contrary to the requirements of the applicable standards was found, provided that the equipment / component is used as described in the above document / certificate and according to the MASC conditions below. A MASC IA certificate is issued based on the work done as per the Base Certificate **. • The routine tests for production units according to the Base Certificate ** must be complied with (if applicable).

ANNEX B

TYPE DESIGNATION

Safety relevant model coding of VEGAMET 140 series:

VEGAMET	*a*	*b*	*c*	*(*)*
	1	Housing for the installation in the control cabinet (indoor)		
		4	Basic functions, for simple control tasks	
			1	Single channel version, for use with one sensor
			2	Dual channel version, for use with one or two sensors

The placeholder within brackets (VEGAMET 14x(*)) is reserved and considered as not safety relevant. It is for internal production control without effect on the product construction.

Safety relevant features	VEGAMET 141(*)	VEGAMET 142(*)
Number of 4…20 mA sensor inputs Ex ia	1	2
Number of digital inputs	-	-
Number of 0/4…20 mA current outputs	1	2
Number of relay outputs	3	3
Bluetooth communication	Yes	Yes

PARAMETERS RELATING TO THE SAFETY

ELECTRICAL RATINGS:

VEGAMET 141(*), VEGAMET 142(*)

Power supply: Nominal range: (terminals 91, 92)	24 V ... 65 V DC; 3 W (141), 4 W (142) 100 V … 230 V AC; 50/60 Hz; 10 VA (141), 12 VA (142) Um = 253V AC for [Ex ia] only
Ambient temperature range:	-20 °C ≤ Tamb ≤ +60 °C
Protection rating:	IP20 (IEC 60529)
Relay output maximum values: (terminals 61 to 69)	1A AC (cos phi > 0.9), 250VAC, 250 VA 1A DC, 60V DC, 40 W Um = 253V AC for [Ex ia] only
Current output: (terminals 41, 42 [VEGAMET 141(*)]) (terminals 41 to 44 [VEGAMET 142(*)])	0/4…20 mA U ≤ 16 V Load = max. 500 Ω Um = 253V AC for [Ex ia] only
Communication interface:	Bluetooth
Sensor input circuit: (terminals 1, 2, 1HART [VEGAMET 141(*)]) (terminals 1, 2, 1HARt or 4, 5, 2HART [VEGAMET 142(*)])	4…20 mA Maximum values of the intrinsically safe signal circuit: Uo ≦ 23.3 V Io ≦ 109.8 mA Po ≦ 639.6 mW Characteristic: linear Ci is negligibly small Li is negligibly small

The maximum values in the table may be used as concentrated capacitances and concentrated inductances.

Ex ia	IIC		IIB, IIIC		IIA
Permissible external inductance Lo	0.2 mH	0.5 mH	0.5 mH	2 mH	10 mH
Permissible external capacitance Co	120 nF	88 nF	580 nF	470 nF	770 nF
Permissible outer Lo/Ro -ratio	55 µH/Ohm	55 µH/Ohm	221 µH/Ohm	221 µH/Ohm	443 µH/Ohm

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

The maximum voltage at the non-intrinsically safe circuits must not exceed 253Vrms in the event of a fault. VEGAMET 140 series have intrinsically safe circuits and non-intrinsically safe circuits.

MARKING

Marking has to be readable and indelible; it has to include the following indications:
Note: Refer to base certificate for original marking.

VEGAMET 141 (*) marking is identical with VEGAMET 142(*) marking.

(Difference to VEGAMET141(*): power consumption: 3W, 10VA)

ROUTINE EXAMINATIONS AND TESTS

Transformer TR101 and TR201 shall be subjected to a voltage of 2500 V rms between primary and secondary windings, for at least 60 seconds, in accordance with the requirements of Clause 11.2 of IEC 60079-11. Alternatively, the test may be carried out at 1.2 times the test voltage, but with a reduced duration of at least 1 second.