Sicherheitshinweise / Safety instructions
ATEX / UKEX / IECEx / cULus
VEGAMET 141, 142

Installation im Nicht-Ex-Bereich
mit Ausgang Eigensicherheit "i"
Installation in non-Ex area
with output intrinsic safety "i"

Document ID: 63696

1 **ATEX**

2 **UKEX**

3 **IECEx**

4 **cULus**

- EU-Baumusterprüfbescheinigung DEMKO 20 ATEX 2383 X (Document ID: 63697)
- UK Type Examination Certificate UL21UKEX2282X (Document ID: 66338)
- Certificate of Conformity IECEx UL 20.0028 X (Document ID: 63698)
- Certificate of Compliance cULus E490658 (Document ID: 63699)

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DE Sicherheitshinweise
EN Safety instructions
FR Consignes de sécurité
ES Instrucciones de seguridad

VEGAMET 141, 142

Installation im Nicht-Ex-Bereich
mit Ausgang Eigensicherheit "i"

CE 0044

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VEGA

ATEX

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Ergänzende Dokumentation:

- Betriebsanleitungen VEGAMET 141, 142
- EU-Baumusterprüfbescheinigung DEMKO 20 ATEX 2383 X (Document ID: 63697)
- EU-Konformitätserklärung (Document ID: 63345)

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1 Geltung

Diese Sicherheitshinweise gelten für die Geräte:

- VEGAMET 141
- VEGAMET 142

Gemäß der Zulassung EU-Baumusterprüfbescheinigung DEMKO 20 ATEX 2383 X, als Zugehörige Betriebsmittel (Bescheinigungsnummer auf dem Typschild) und für alle Geräte mit dem Sicherheitshinweis 63696.

Die Zündschutzkennzeichnung sowie die zugrundeliegenden Normenstände können aus oben genannten Zertifikaten entnommen werden:

Zündschutzkennzeichen:

- II (1) G [Ex ia Ga] IIC
- II (1) D [Ex ia Da] IIIC

2 Gerätekonfiguration/-eigenschaften

Die detaillierten Gerätekonfigurationen können mit Hilfe der Seriennummersuche auf unserer Homepage abgerufen werden.

Gehen Sie auf "www.vega.com" und geben Sie im Suchfeld die Seriennummer Ihres Gerätes ein.

Alternativ finden Sie alles über Ihr Smartphone:

- VEGA Tools-App aus dem "*Apple App Store*", "*Google Play Store*" oder " *Baidu Store*" herunterladen
- DataMatrix-Code auf dem Typschild des Gerätes scannen oder
- Seriennummer manuell in die App eingeben

3 Allgemeines

Die ein- und zweikanaligen Steuergeräte VEGAMET 141, 142 sind ideal für einfache Regelungs- und Steuerungsaufgaben in allen Industriebereichen für Nicht-Ex- oder Ex-Anwendungen zum Anschluss von ein oder zwei 4 … 20 mA-Sensoren.

Sie dienen als Anzeige für kontinuierliche Sensoren und können gleichzeitig als (Ex)Speisegerät für die angeschlossene Sensorik dienen.

Die Einstellung ist einfach Vor-Ort-Bedienung mittels manueller Bedienung oder remote durch Smartphone/Tablet und PC/Laptop mittels Bluetooth Smart möglich.

Es sind keine weiteren Schnittstellen an den Steuergeräten vorhanden. Die Geräte können im Schaltschrank eingesetzt werden.

Die Betriebsanleitung sowie die zutreffenden, für den Explosionsschutz gültigen Errichtungsvorschriften bzw. Normen für elektrische Anlagen sind grundsätzlich zu beachten.

Die Errichtung von explosionsgeschützten Anlagen muss grundsätzlich durch Fachpersonal vorgenommen werden.

4 Anwendungsbereich, Einsatz in Gas- und Staubatmosphären

Zugehöriges Betriebsmittel
Die VEGAMET 141, 142 dürfen außerhalb von explosionsgefährdeten Bereichen als Zugehörige Betriebsmittel errichtet und betrieben werden.

5 Besondere Betriebsbedingungen für sicheren Betrieb

Die nachfolgende Übersicht listet alle besonderen Eigenschaften des VEGAMET 141, 142, welche

eine Kennzeichnung mit dem Symbol "X" hinter der Zertifikatsnummer erforderlich machen.

Montagemöglichkeiten
Das VEGAMET 141, 142 muss senkrecht montiert werden.

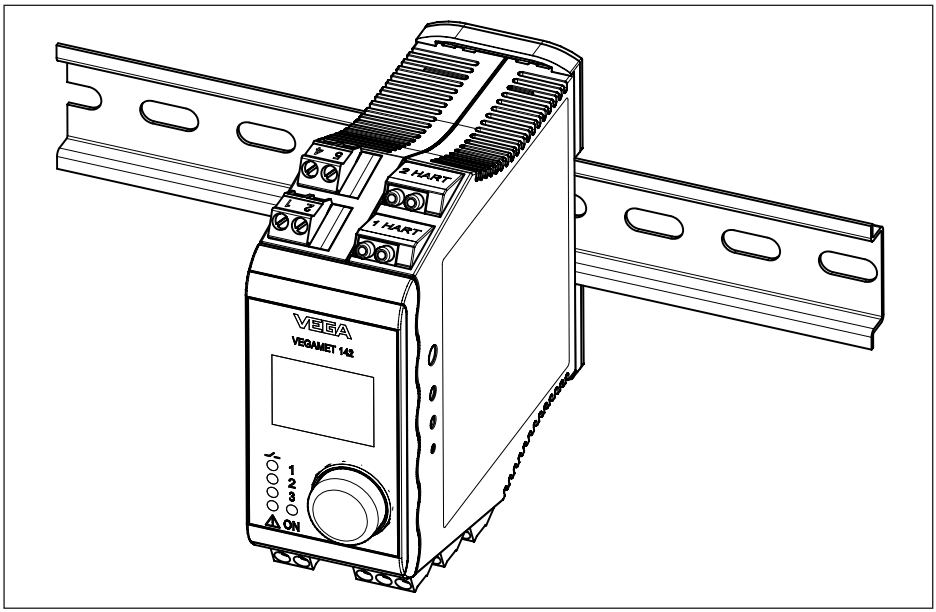

Abb. 1: VEGAMET 141, 142 auf Tragschiene

Umgebungstemperatur
Der Installateur muss sicherstellen, dass der Nennumgebungstemperaturbereich des Gerätes nicht überschritten wird, wenn es zusammen mit anderen Geräten in einem Gehäuse installiert wird, und dass eine ausreichende Trennng um das Gerät herum gewährleiset wird.

Kommunikation, Service
Die Servicebuchsen 1HART, 2HART liegen parallel zu den eigensicheren Ausgangsklemmen 1, 2 oder 4, 5.

6 Sicherer Betrieb

Allgemeine Betriebsbedingungen
- Gerät nicht außerhalb der elektrischen, thermischen und mechanischen Angaben des Herstellers betreiben

Anschlussbedingungen
- Die Anschlussleitung des VEGAMET 141, 142 ist fest und so zu verlegen, dass sie hinreichend gegen Beschädigungen geschützt ist
- Beträgt die Temperatur an den Einführungsteilen mehr als 70 °C müssen entsprechende temperaturbeständige Anschlussleitungen verwendet werden

7 Wichtige Hinweise für die Montage und Wartung

Allgemeine Hinweise

Für die Montage, die elektrische Installation, die Inbetriebnahme und die Wartung des Gerätes müssen folgende Voraussetzungen erfüllt werden:

- Das Personal muss über die Qualifikation entsprechend seiner Funktion und Tätigkeit verfügen
- Das Personal muss im Explosionsschutz ausgebildet sein
- Das Personal muss mit den entsprechenden gültigen Vorschriften vertraut sein, z. B. Projektierung und Errichtung entsprechend der EN 60079-14
- Bei Arbeiten am Gerät (Montage, Installation, Wartung) ist sicherzustellen, dass keine explosionsfähige Atmosphäre vorhanden ist, wenn möglich, Versorgungsstromkreise spannungslos schalten
- Gerät entsprechend den Herstellerangaben, der EU-Baumusterprüfbescheinigung und entsprechend den gültigen Vorschriften, Regeln und Normen installieren
- Veränderungen am Gerät können den Explosionsschutz und somit die Sicherheit beeinträchtigen, daher ist es nicht zulässig, dass Reparaturen durch den Endverbraucher durchgeführt werden
- Veränderungen dürfen nur durch von der Firma VEGA autorisiertes Personal durchgeführt werden
- Nur zugelassene Ersatzteile verwenden
- Für den Ein- und Anbau von in den Zulassungsunterlagen nicht enthaltenen Komponenten sind nur solche zugelassen, die dem auf dem Deckblatt angegebenen Normenstand technisch entsprechen. Sie müssen für die Einsatzbedingungen geeignet sein und eine gesonderte Bescheinigung besitzen. Die besonderen Bedingungen der Komponenten sind zu beachten und die Komponenten sind ggf. mit in die Typprüfung einzubeziehen. Dies gilt auch für die bereits in der technischen Beschreibung genannten Komponenten.

Montage

Bei der Gerätemontage ist zu beachten:

- Mechanische Beschädigungen am Gerät sind zu vermeiden
- Mechanische Reibungen sind zu vermeiden

Wartung

Zur Sicherstellung der Funktion des Gerätes wird eine periodische Sichtkontrolle empfohlen auf:

- Sichere Montage
- Keine mechanischen Beschädigungen oder Korrosion
- Durchgescheuerte oder anderweitig beschädigte Leitungen
- Keine lockere Verbindungen der Leitungsanschlüsse, Potenzialausgleichsanschlüsse
- Korrekte und eindeutig gekennzeichnete Leitungsverbindungen

Eigensicherheit "i"

- Gültige Vorschriften für die Zusammenschaltung von eigensicheren Stromkreisen beachten
- Das Gerät ist ausschließlich für den Anschluss an bescheinigte, eigensichere Betriebsmittel geeignet
- Wird der eigensichere Stromkreis in staubexplosionsgefährdete Bereiche der Zone 20 oder 21 geführt, ist sicherzustellen, dass die Betriebsmittel, die an diesen Stromkreisen angeschlossen werden, die Anforderungen der Kategorie 1D (EPL Da-Betriebsmittel) bzw. 2D (EPL Db-Betriebsmittel) erfüllen und entsprechend zertifiziert sind

8 Elektrische Daten

VEGAMET 141, 142

Nicht eigensicherer Stromkreis

Versorgungsstromkreis:	
Klemmen 91[+, L], 92[-, N]	U = 24 … 65 V DC (-15 … +10 %) P = 3 W (VEGAMET 141), 4 W (VEGAMET 142) U = 100 … 230 V AC (-15 … +10 %), 50/60 Hz P = 10 VA (VEGAMET 141), 12 VA (VEGAMET 142) U_m = 253 V AC

Relaisausgang:	
Relais 1: Klemmen 61, 62, 63	1 A AC (cos phi > 0,9), 250 V AC, 250 VA
Relais 2: Klemmen 64, 65, 66	1 A DC, 60 V DC, 40 W
Relais 3: Klemmen 67, 68, 69	U_m = 253 V AC

Stromausgangskreis:	
I_{out} 1, Klemmen 41[+], 42[-] Zusätzlich nur VEGAMET 142: I_{out} 2, Klemmen 43[+], 44[-]	I = 0/4 … 20 mA U ≤ 16 V DC Last ≤ 500 Ohm U_m = 253 V AC

Eigensicherer Stromkreis

Versorgungs- und Signalstromkreis:	
4 … 20 mA-Sensor 1: Klemmen 1[+], 2[-], Servicebuchse [1HART] Zusätzlich nur VEGAMET 142: 4 … 20 mA-Sensor 2: Klemmen 4[+], 5[-], Servicebuchse [2HART]	In Zündschutzart Eigensicherheit Ex ia IIC, IIB/IIIC.
	Zum Anschluss an einen bescheinigten, eigensicheren Stromkreis. U_o ≤ 23,3 V DC I_o ≤ 109,8 mA P_o ≤ 639,6 mW
	Kennlinie: linear
	C_i vernachlässigbar klein L_i vernachlässigbar klein
	Die in der Tabelle angegebenen Maximalwerte können als konzentrierte Kapazitäten und konzentrierte Induktivitäten verwendet werden. Die Werte für IIC und IIB sind auch für staubexplosionsgefährdete Bereiche zulässig.

Ex ia	**IIC**		**IIB, IIIC**		**IIA**
Zulässige äußere Induktivität L_o	0,2 mH	0,5 mH	0,5 mH	2 mH	10 mH
Zulässige äußere Kapazität C_o	120 nF	88 nF	580 nF	470 nF	770 nF
Zulässiges äußeres L_o/R_o-Verhältnis	55 µH/Ohm	55 µH/Ohm	221 µH/ Ohm	221 µH/ Ohm	443 µH/ Ohm

Die Servicebuchsen H ART1 und HART2 sind direkt mit den eigensicheren Ausgangsklemmen (1,

2 und 4, 5) verbunden. Die Eigensicherheit der Kombination aus eigensicherem HART-Kommunikator (z. B. VEGACONNECT) und angeschlossenem eigensicherem Gerät muss als Teil des Systementwurfs bewertet werden

Die eigensicheren Stromkreise des VEGAMET 141, 142 sind galvanisch von Erde getrennt.

Die eigensicheren Stromkreise des VEGAMET 141, 142 sind bis zu einem Spitzenwert von 375 V sicher von den nichteigensicheren Stromkreisen getrennt.

Die maximale Spannung an den nicht eigensicheren Stromkreisen darf im Fehlerfall 253 Vrms nicht überschreiten.

9 Mechanische Daten

Die folgenden mechanischen Daten gelten für alle Gehäuse- und Elektronikausführungen.

Mechanische Daten	
Schutzart (IEC/EN 60529)	IP20
Anschlussquerschnitt	0,25 … 2,5 mm²
Überspannungskategorie	II
Verschmutzungsgrad	2

10 Thermische Daten

Zulässige Umgebungstemperaturen

Zulässige Umgebungstemperatur am Einbauort eines Gerätes	**Umgebungstemperatur (Ta)**
als Zugehörige Betriebsmittel	-20 … +60 °C (-4 … +140 °F)

11 Installation

Die Steuergeräte VEGAMET 141, 142 als zugehöriges Betriebsmittel müssen außerhalb von explosionsgefährdeten Bereichen montiert und betrieben werden.

Wird der eigensichere Stromkreis in staubexplosionsgefährdete Bereiche der Zone 20 oder 21 geführt, ist sicherzustellen, dass die Betriebsmittel, die an diesen Stromkreisen angeschlossen werden, die Anforderungen der Kategorie 1D (EPL Da-Betriebsmittel) bzw. 2D (EPL Db-Betriebsmittel) erfüllen und entsprechend zertifiziert sind.

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Supplementary documentation:

- Operating Instructions VEGAMET 141, 142
- EU type approval certificate DEMKO 20 ATEX 2383 X (Document ID: 63697)
- EU declaration of conformity (Document ID: 63345)

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1 Area of applicability

These safety instructions apply to the devices:

- VEGAMET 141
- VEGAMET 142

In accordance with the EU type approval certificate DEMKO 20 ATEX 2383 X, as associated equipment (certificate number on type plate) and for all devices with safety instruction 63696.

The classification as well as the respective standards are stated in the above certificates:

Type of protection marking:

- II (1) G [Ex ia Ga] IIC
- II (1) D [Ex ia Da] IIIC

2 Device configuration/-properties

The detailed device configurations can be retrieved using the serial number search on our homepage.

Move to " www.vega.com" and enter in the search field the serial number of your instrument.

Alternatively, you can find all via your smartphone:

- Download the VEGA Tools app from the " *Apple App Store*", " *Google Play Store*" or " *Baidu Store*"
- Scan the DataMatrix code on the type label of the instrument or
- Enter the serial number manually in the app

3 General information

The single and double channel controllers VEGAMET 141, 142 are ideal for simple control tasks in all industrial areas for non-Ex or Ex applications for the connection of one or two 4 … 20 mA sensors.

They serve as a display for continuous sensors and can also be used as a (Ex)power supply unit for the connected sensors.

The setting can be easily done on site using manual operation or remotely using smartphone/tablet and PC/Laptop using Bluetooth Smart.

There are no other interfaces on the controllers. The devices can be used in the switching cabinet.

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.

4 Application area, use in gas and dust atmospheres

Associated apparatus

The VEGAMET 141, 142 may be installed and operated outside of hazardous areas as associated equipment.

5 Specific conditions of use for safe operating mode

The following overview is listing all special properties of VEGAMET 141, 142, which make a labelling with the symbol "X" behind the certificate number necessary.

Mounting options

The VEGAMET 141, 142 must be mounted vertically.

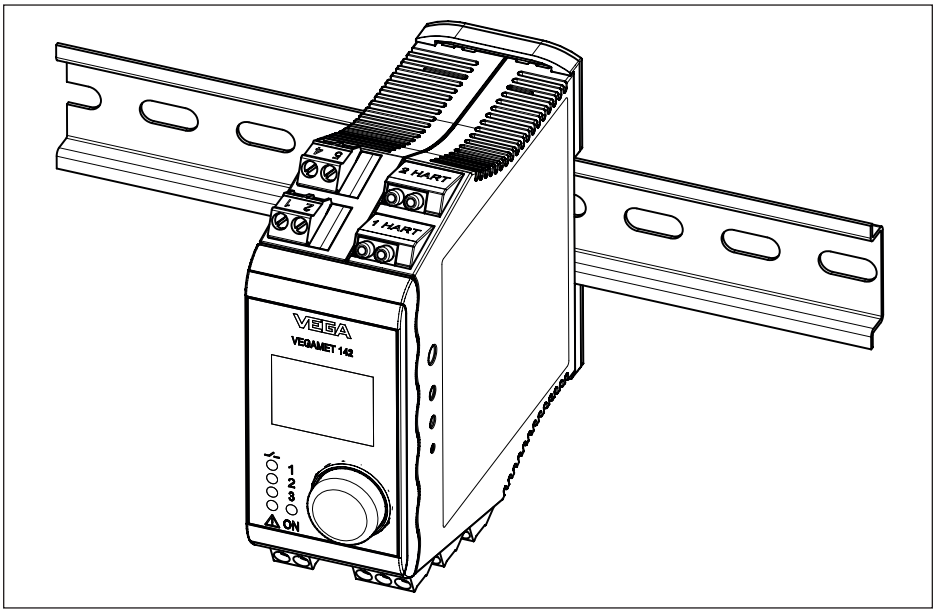

Abb. 2: VEGAMET 141, 142 on carrier rail

Ambient temperature
The installer must ensure that the rated ambient temperature range of the device is not exceeded when it is installed in a housing together with other devices and that adequate separation is provided around the device.

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

6 Safe operating mode

General operating conditions
- Do not operate the instrument outside the electrical, thermal and mechanical specifications of the manufacturer

Connection conditions
- The connection cable of VEGAMET 141, 142 has to be wired fix and in such a way that damages can be excluded
- If the temperature at the entry parts exceeds 70 °C, temperature-resistant connection cables must be used

7 Important information for mounting and maintenance

General instructions
The following requirements must be fulfilled for mounting, electrical installation, setup and maintenance of the instrument:

- The staff must be qualified according the respective tasks

- The staff must be trained in explosion protection
- The staff must be familiar with the respectively valid regulations, e.g. planning and installation acc. to EN 60079-14
- Make sure when working on the instrument (mounting, installation, maintenance) that there is no explosive atmosphere present, the supply circuits should be voltage-free, if possible.
- The instrument has to be mounted according to the manufacturer specifications, the EU type approval certificate and the valid regulations and standards
- Modifications on the instrument can influence the explosion protection and hence the safety, therefore repairs are not permitted to be conducted by the end user
- Modifications must only be carried out by employees authorized by VEGA company
- Use only approved spare parts
- Components for installation and connection not included in the approval documents are only permitted if these correspond technically to the latest standard mentioned on the cover sheet. They must be suitable for the application conditions and have a separate certificate. The special conditions of the components must be noted and if necessary, the components must be integrated in the type test. This applies also to the components already mentioned in the technical description.

Mounting

Keep in mind for instrument mounting

- Mechanical damage on the instrument must be avoided
- Mechanical friction must be avoided

Maintenance

To ensure the functionality of the device, periodic visual inspection is recommended for:

- Secure mounting
- No mechanical damages or corrosion
- Worn or otherwise damaged cables
- No loose connections of the line connections, equipotential bonding connections
- Correct and clearly marked cable connections

Intrinsic safety "i"

- Observe the valid regulations for the interconnection of intrinsically safe circuits.
- The instrument is only suitable for connection to certified, intrinsically safe instruments
- 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 category 1D (EPL Da instruments) or 2D (EPL Db instruments) and are certified respectively

8 Electrical data

VEGAMET 141, 142

Non-intrinsically safe circuit

Supply circuit:	
Terminals 91[+, L], 92[-, N]	U = 24 … 65 V DC (-15 … +10 %) P = 3 W (VEGAMET 141), 4 W (VEGAMET 142) U = 100 … 230 V AC (-15 … +10 %), 50/60 Hz P = 10 VA (VEGAMET 141), 12 VA (VEGAMET 142) U_m = 253 V AC

Relay output:	
Relay 1: terminals 61, 62, 63 Relay 2: terminals 64, 65, 66 Relay 3: terminals 67, 68, 69	1 A AC (cos phi > 0.9), 250 V AC, 250 VA 1 A DC, 60 V DC, 40 W U_m = 253 V AC

Current output circuit:	
I_{out} 1, terminals 41[+], 42[-] In addition only VEGAMET 142: I_{out} 2, terminals 43[+], 44[-]	I = 0/4 … 20 mA U ≤ 16 V DC Load ≤ 500 Ohm U_m = 253 V AC

Intrinsically safe circuit

Supply and signal circuit:	
4 … 20 mA sensor 1: Terminals 1[+], 2[-], Service socket [1HART] In addition only VEGAMET 142: 4 … 20 mA sensor 2: Terminals 4[+], 5[-], Service socket [2HART]	In type of protection intrinsic safety Ex ia IIC, IIB/IIIC.
	For connection to a certified, intrinsically safe circuit. U_o ≤ 23.3 V DC I_o ≤ 109.8 mA P_o ≤ 639.6 mW
	Characteristics: linear
	C_i negligibly small L_i negligibly small
	The maximum values given in the table can be used as concentrated capacitances and concentrated inductances. The values for IIC and IIB are also permissible for dust explosive areas.

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

The HART1 and HART2 service sockets are directly connected to the intrinsically safe output terminals (1, 2 and 4, 5). The intrinsic safety of the combination of intrinsically safe HART communicator (e.g. VEGACONNECT) and connected intrinsically safe device must be evaluated as part of the system design.

The intrinsically safe circuits of VEGAMET 141, 142 are galvanically separated from ground.

The intrinsically safe circuits of the VEGAMET 141, 142 are reliably separated from the non-intrinsically safe circuit up to a peak value of 375 V.

The maximum voltage on the non-intrinsically safe circuits must not exceed 253 Vrms in the event of a fault.

9 Mechanical data

The following mechanical data are valid for all housing and electronics versions.

Mechanical data	
Protection (IEC/EN 60529)	IP20
Connection cross-section:	0.25 … 2.5 mm²
Overvoltage category	II
Pollution degree	2

10 Thermal data

Permissible ambient temperatures

Permissible ambient temperature at the installation location of an instrument	**Ambient temperature (Ta)**
As associated equipment	-20 … +60 °C (-4 … +140 °F)

11 Installation

Controllers VEGAMET 141, 142 as associated equipment must be mounted and operated outside hazardous areas.

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 category 1D (EPL Da instruments) or 2D (EPL Db instruments) and are certified respectively.

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Documentation complémentaire:

- Notices de mise en service VEGAMET 141, 142
- Certificat de contrôle de type UE DEMKO 20 ATEX 2383 X (Document ID: 63697)
- Déclaration de conformité UE (ID du document : 63345)

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PT	Normas de segurança para utilização em zonas sujeitas a explosão
NL	Veiligheidsaanwijzingen voor gebruik op plaatsen waar ontploffingsgevaar kan heersen
SV	Säkerhetsanvisningar för användning i explosiionsfarliga områden
DA	Sikkerhedsforskrifter til anvendelse i explosionsfarlig atmosfare
FI	Turvallisuusohjeet räjähdysvaarallisisssa tiloissa käyttöä varten
EL	Υποδείξεις ασΦαλείας για τη χρησιμοποίηση σε περιοχές που υπάρχει κίνδυνος έκρηξης

DE	Die vorliegenden Sicherheitshinweise sind im Download unter www.vega.com standardmäßig in den Sprachen deutsch, englisch, französisch und spanisch verfügbar. Weitere EU-Landessprachen stellt VEGA nach Anforderungen zur Verfügung.
EN	These safety instructions are available as a standard feature in the download area under www.vega.com in the languages German, English, French and Spanish. Further EU languages will be made available by VEGA upon request.
FR	Les présentes consignes de sécurité sont disponibles au téléchargement sous www.vega.com en standard en allemand, en anglais, en francais et en espagnol. VEGA met à disposition d'autres langues de l'Union Européenne selon les exigences.
ES	Las indicaciones de seguridad presentes están disponibles en la zona de descarga de www.vega.com de forma estándar en los idiomas inglés, francés y español. VEGA pone a disposición otros idiomas de la UE cuando son requeridos.

1 Validité

Les présentes consignes de sécurité concernent les appareils suivants :

- VEGAMET 141
- VEGAMET 142

Conformément à l'agrément de certificat de contrôle de type UE DEMKO 20 ATEX 2383 X, comme matériel correspondant (numéro de certificat sur la plaque signalétique) et pour tous les appareils avec la consigne de sécurité 63696.

L'identification de protection contre l'inflammation ainsi que les états normalisés sur lesquels elle se fonde figurent dans les certificats mentionnés ci-dessus :

Mode de protection :

- II (1) G [Ex ia Ga] IIC
- II (1) D [Ex ia Da] IIIC

2 Configuration / propriétés des appareils

Vous pouvez consulter la configuration détaillée de l'appareil au moyen de la recherche de numéros de série sur notre page d'accueil.

Rendez-vous sur " www.vega.com" et indiquez dans la zone de recherche le numéro de série de votre appareil.

Vous trouverez en alternative tout sur votre smartphone :

- Télécharger l'application VEGA Tools depuis l'" *Apple App Store*", le " *Google Play Store*" ou le " *Baidu Store*"
- Numériser le code DataMatrix situé sur la plaque signalétique de l'appareil ou
- Entrer le numéro de série manuellement dans l'application

3 Généralités

Les unités de commande à un ou deux canaux VEGAMET 141, 142 sont idéales pour les tâches de commande et de régulation simples pour les applications antidéflagrantes et non-antidéflagrantes dans tous les secteurs industriels pour le raccordement d'un ou deux capteurs 4 … 20 mA.

Elles servent d'affichage pour les capteurs continus et peuvent simultanément faire office de bloc d'alimentation (Ex) pour la technique sensorielle raccordée.

L'ajustement peut être effectué localement simplement au moyen du réglage manuel ou à distance avec un smartphone/une tablette et un PC/un ordinateur portable via Bluetooth Smart.

Les unités de commande ne possèdent aucune autre interface. Les appareils peuvent être utilisés dans l'armoire de commande.

La notice de mise en service et les règlements d'installation en vigueur concernant la protection Ex et les normes relatives aux installations électriques doivent être respectés.

Seul un personnel spécialisé et qualifié est autorisé à installer le matériel ou les groupes de matériel pour atmosphères protégées contre les explosions.

4 Domaine d'application, utilisation dans des atmosphères gazeuses et poussiéreuses

Matériel associé

Les VEGAMET 141, 142 peuvent être mises en place et exploitées hors des zones antidéflagrantes comme matériel associé.

5 Conditions d'utilisation particulières pour fonctionnement sécurisé

L'aperçu ci-après liste toutes les caractéristiques spécifiques au VEGAMET 141, 142 nécessitant une caractérisation par le symbole "X" après le numéro de certificat.

Possibilités de montage
Le VEGAMET 141, 142 doit être monté verticalement.

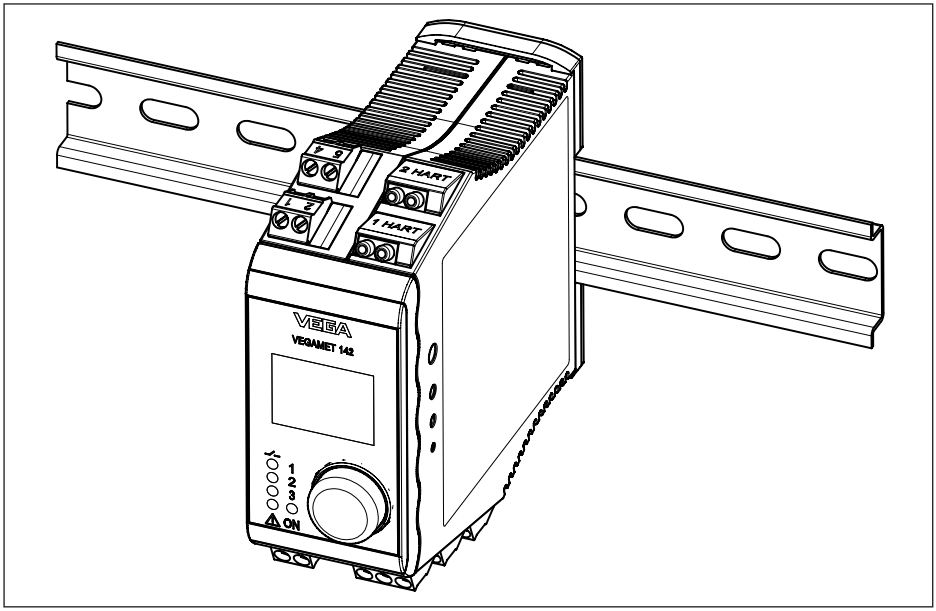

Abb. 3: VEGAMET 141, 142 sur rail

Température ambiante
L'installateur a l'obligation de garantir que la plage de température ambiante nominale de l'appareil n'est pas dépassée korsqu'il est installé ensemble avec d'autres appareils dans un boîtier et qu'une séparation suffisante est assurée tout autour de l'appareil.

Communication, services
Les prises de service 1HART, 2HART sont connectées en parallèle aux bornes de sortie à sécurité intrinsèque 1, 2 ou 4, 5.

6 Fonctionnement sécurisé

Conditions de service générales

- Ne pas utiliser l'appareil hors des spécifications électriques, thermiques et mécaniques du fabricant

Conditions de raccordement

- Le câble de raccordement du VEGAMET 141, 142 doit être posé de manière fixe et de telle manière qu'il soit suffisamment protégé contre les endommagements.

- Si la température au niveau des entrées de câble dépasse 70 °C, il faudra utiliser du câble de raccordement adéquat et résistant aux températures sur site

7 Instructions importantes pour le montage et l'entretien

Remarques générales
Pour le montage, l'installation électrique, la mise en service et l'entretien de l'appareil, les conditions suivantes doivent être réunies :

- Le personnel doit disposer des qualifications correspondant à ses fonctions et activités
- Le personnel doit être formé à la protection contre les explosions
- Le personnel doit être familier des dispositions en vigueur, par ex. sur la conception, sélection et construction d'installations électriques selon la norme EN 60079-14
- Lors des opérations sur l'appareil (montage, installation, entretien), il est impératif de s'assurer de l'absence totale d'atmosphère explosible, et si possible mettre les circuits électriques d'alimentation hors tension.
- Installer l'appareil conformément aux indications du fabricant, au certificat de contrôle de type UE et aux réglementations en vigueur.
- Les modifications de l'appareil peuvent affecter la protection anti-déflagrante et ainsi la sécurité, il n'est donc pas autorisé que les réparations soient effectuées par l'utilisateur final
- Le personnel de la Société VEGA est le seul habilité à procéder à des modifications
- Utiliser uniquement des pièces de rechange homologuées
- Seuls des composants qui satisfont techniquement la situation des normes indiquée sur la page de garde sont autorisés pour le montage et l'ajout de composants non inclus dans les dossiers d'agrément. Ils doivent être appropriés pour les conditions d'utilisation et être assortis d'un certificat spécial. Respecter impérativement es conditions particulières des composants, lesquels doivent le cas échéant être intégrés dans le contrôle du type. Cela concerne également les composants mentionnés dans la description technique.

Montage
Lors du montage de l'appareil, respecter les consignes suivantes :

- Éviter les dommages mécaniques à l'appareil
- Éviter les frottements mécaniques

Maintenance
Pour garantir le fonctionnement de l'appareil, un contrôle visuel périodique est recommandé concernant :

- Fiabilité du montage
- Aucune détérioration mécanique ou corrosion
- Câbles usés ou autrement détériorés
- Aucune connexion lâche des raccordements de conduite, raccordements de compensation de potentiel
- Connexions de câbles correctes et clairement marquées

Sécurité intrinsèque "i"

- Respecter les règles en vigueur pour l'interconnexion des circuits courant à sécurité intrinsèque
- L'appareil est exclusivement destiné au raccordement sur des matériels certifiés à sécurité intrinsèque
- Si le circuit courant à sécurité intrinsèque passe dans des atmosphères explosibles de zone 20 ou 21, s'assurer que le matériel raccordé à ces circuits courant satisfait aux exigences des catégories 1D (matßeriel EPL Da) ou 2D (matériel EPL Db) et qu'il est certifié en conséquence

8 Caractéristiques électriques

VEGAMET 141, 142

Circuit courant non de sécurité intrinsèque

Circuit d'alimentation électrique:	
Bornes 91[+, L], 92[-, N]	U = 24 … 65 V DC (-15 … +10 %) P = 3 W (VEGAMET 141), 4 W (VEGAMET 142) U = 100 … 230 V AC (-15 … +10 %), 50/60 Hz P = 10 VA (VEGAMET 141), 12 VA (VEGAMET 142) U_m = 253 V AC

Sortie relais:	
Relais 1: Bornes 61, 62, 63	1 A AC (cos phi > 0,9), 250 V AC, 250 VA
Relais 2: Bornes 64, 65, 66	1 A DC, 60 V DC, 40 W
Relais 3: Bornes 67, 68, 69	U_m = 253 V AC

Circuit de sortie courant :	
I_{out} 1, Bornes 41[+], 42[-] En supplément uniquement VEGAMET 142 : I_{out} 2, Bornes 43[+], 44[-]	I = 0/4 … 20 mA U ≤ 16 V DC Charge ≤ 500 Ohm U_m = 253 V AC

Circuit courant de sécurité intrinsèque

Circuit d'alimentation et signal :	
Capteur 4 … 20 mA 1 : bornes 1[+], 2[-], Prise de service [1HART] En supplément uniquement VEGAMET 142 : Capteur 4 … 20 mA 2 : bornes 4[+], 5[-], Prise de service [2HART]	En mode de protection sécurité intrinsèque Ex ia IIC, IIB/IIIC.
	Pour le raccordement à un circuit courant de sécurité intrinsèque certifié. U_o ≤ 23,3 V DC I_o ≤ 109,8 mA P_o ≤ 639,6 mW
	Courbe caractéristique : linéaire
	C_i petite valeur négligeable L_i petite valeur négligeable
	Les valeurs maximales indiquées dans le tableau peuvent être utilisées comme capacités concentrées et inductances concentrées. Les valeurs pour IIC et IIB sont aussi autorisées pour des zones explosibles poussiéreuses.

Ex ia	**IIC**		**IIB, IIIC**		**IIA**
Inductance externe tolérée L_o	0,2 mH	0,5 mH	0,5 mH	2 mH	10 mH
Capacité externe tolérée C_o	120 nF	88 nF	580 nF	470 nF	770 nF
Rapport L_o/R_o extérieur autorisé	55 µH/Ohm	55 µH/Ohm	221 µH/ Ohm	221 µH/ Ohm	443 µH/ Ohm

Les prises de service H ART1 et HART2 sont directement connectées aux bornes de sortie à

sécurité intrinsèque (1, 2 et 4, 5). La sécurité intrinsèque de la combinaison communicateur HART à sécurité intrinsèque (par ex. VEGACONNECT) et appareil à sécurité intrinsèque raccordé doit être évaluée comme une partie de la conception du système

Les circuits électriques à sécurité intrinsèque du VEGAMET 141, 142 sont isolés galvaniquement de la terre.

Les circuits électriques à sécurité intrinsèque de VEGAMET 141, 142 sont séparés de manière sûr des circuits électriques sans sécurité intrinsèque jusqu'à 375 V.

La tension maximale sur les circuits électriques sans sécurité intrinsèque ne doit pas dépasser 253 Vms en cas de défaut.

9 Caractéristiques mécaniques

Les caractéristiques mécaniques suivantes sont valides pour toutes les versions de boîtiers et d'électronique.

Caractéristiques mécaniques	
Protection (IEC/EN 60529)	IP20
Section de raccordement	0,25 … 2,5 mm^2
Catégorie de surtensions	II
Degré de pollution	2

10 Caractéristiques thermiques

Températures ambiantes admissibles

Température ambiante tolérée sur le lieu de montage d'un appareil	**Température ambiante (Ta)**
comme matériel associé	-20 … +60 °C (-4 … +140 °F)

11 Installation

Les unités de commande VEGAMET 141, 142 comme matériel associé doit être monté et utilisé en dehors des zones dangereuses.

Si le circuit courant à sécurité intrinsèque passe dans des atmosphères explosibles de zone 20 ou 21, s'assurer que le matériel raccordé à ces circuits courant satisfait aux exigences des catégories 1D (matßeriel EPL Da) ou 2D (matériel EPL Db) et qu'il est certifié en conséquence.

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Documentación adicional:

- Instrucciones de servicio VEGAMET 141, 142
- Certificado de examen de tipo UE DEMKO 20 ATEX 2383 X (Document ID: 63697)
- Declaración de conformidad EU (Document ID: 63345)

Estado de redacción: 2020-01-28

63696-01-201218

DE	Sicherheitshinweise für den Einsatz in explosionsgefährdeten Bereichen
EN	Safety instructions for the use in hazardous areas
FR	Consignes de sécurité pour une application en atmosphères explosibles
IT	Normative di sicurezza per l'impiego in luoghi con pericolo di esplosione
ES	Instrucciones de seguridad para el empleo en áreas con riesgo de explosión
PT	Normas de segurança para utilização em zonas sujeitas a explosão
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1 Vigencia

Las presentes instrucciones de seguridad son validas para los equipos:

- VEGAMET 141
- VEGAMET 142

De acuerdo con el certificado de examen de tipo de la UE DEMKO 20 ATEX 2383 X, como equipo correspondiente (Número de certificación en la placa de tipos) y para todos los instrumentos con la instrucción de seguridad 63696.

La marca de protección e y las normas correspondientes se encuentran en los certificados mencionados anteriormente:

Símbolo de protección e:

- II (1) G [Ex ia Ga] IIC
- II (1) D [Ex ia Da] IIIC

2 Configuración/propiedades del equipo

Las configuraciones detalladas de los equipos se pueden consultar con ayuda de la búsqueda de números de serie en nuestra página web.

Vaya a " www.vega.com" e introduzca el número de serie de su dispositivo en el campo de búsqueda.

Opcionalmente, también podrá encontrar todo lo relacionado con su smartphone:

- Descargar las aplicaciones VEGA Tools desde " *Apple App Store*", " *Google Play Store*" o " *Baidu Store*"
- Escanear DataMatrix-Code de la placa de tipos del instrumento o
- Entrar el número de serie manualmente en el App

3 Informaciones generales

Las unidades de control de uno y dos canales VEGAMET 141, 142 son ideales para tareas de regulación y control sencillas en todas las áreas industriales para aplicaciones no Ex o Ex para la conexión de uno o dos sensores de 4 … 20 mA.

Sirven como indicación para sensores continuos y también pueden utilizarse como fuentes de alimentación (Ex) para los sensores conectados.

La configuración se puede hacer fácilmente en el sitio usando la operación manual o remotamente usando Smartphone/Tablet y PC/Laptop a través de Bluetooth Smart.

No hay más interfaces en los controladores. Los aparatos se pueden utilizados en el armario de control.

Hay que observar siempre el manual de instrucciones así como las especificaciones generales de montaje o normas para equipos eléctricos, aplicables para la protección contra explosión.

La instalación de equipos protegidos contra explosión tiene que ser realizada básicamente por personal especializado.

4 Campo de aplicación, uso en atmósferas de gas y polvo

Material correspondiente

Los VEGAMET 141, 142 pueden instalarse y utilizarse como equipo aosciado fuera de las zonas peligrosas.

5 Condiciones de operación especiales para un funcionamiento seguro

La siguiente tabla muestra todas las propiedades especiales del VEGAMET 141, 142 que requieren una marca con el símbolo "X" después del número de certificado.

Posibilidades de montaje
El VEGAMET 141, 142 debe ser montado verticalmente.

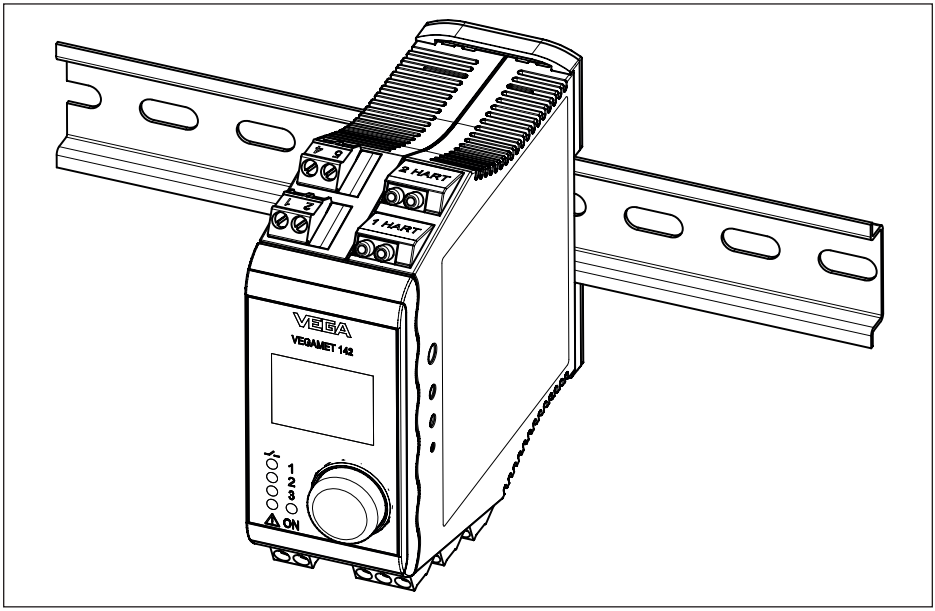

Abb. 4: VEGAMET 141, 142 en carril de montaje

Temperatura ambiente
El instalador debe asegurarse de que no se exceda el rango de temperatura ambiente nominal del equipo cuando se instale en una carcasa con otros equipos y que haya suficiente separación alrededor del equipo.

Comunicación, Servicio
Los enchufes de servicio 1HART, 2HART están conectados en paralelo a los terminales de salida de seguridad intrínseca 1, 2 o 4, 5.

6 Funcionamiento seguro

Condiciones de operación generales
- No operar ningún instrumento fuera de las especificaciones eléctricas, térmicas y mecánicas del fabricante

Condiciones de conexión
- Hay que tender y fijar cable de conexión del VEGAMET 141, 142 de forma tal que quede completamente protegido contra daños.

- Si la temperatura en las piezas de entrada es mayor de 70 °C, hay que emplear líneas de conexión adecuadas resistentes a la temperatura

7 Indicaciones importantes para el montaje y mantenimiento

Instrucciones generales
Para el montaje, la instalación eléctrica, la puesta en marcha y el mantenimiento del instrumento hay cumplir los requisitos siguientes:

- El personal debe tener las calificaciones de acuerdo a su función y actividad
- El personal tiene que estar entrenado en la protección contra explosión
- El personal debe estar familiarizado con la normativa vigente, por ejemplo, planificación y construcción de acuerdo con la norma EN 60079-14
- Cuando trabaje en el dispositivo (instalación, instalación, mantenimiento), asegúrese de que no haya atmósfera potencialmente explosiva; si es posible, desconecte los circuitos de la fuente de alimentación.
- Instale el dispositivo de acuerdo con las instrucciones del fabricante, el certificado de examen de tipo UE y las reglamentaciones, reglas y normas aplicables.
- Cambios en el instrumento pueden afectar la protección contra explosión y por lo tanto la seguridad, la seguridad, por lo tanto, no está permitido que el usuario final realice reparaciones
- Modificaciones solamente pueden ser realizada por personal autorizado por la empresa VEGA.
- Usar solo piezas de repuesto aprobadas
- Para el montaje y desmontaje de componentes no incluidos en los documentos de homologación, sólo se admiten aquellos componentes que corresponden técnicamente al estado estándar indicado en la portada. Deben ser adecuados para las condiciones de utilización y disponer de un certificado individual. Deben observarse las condiciones especiales de los componentes y, en caso necesario, estos deben incluirse en el ensayo de tipo. Esto también se aplica a los componentes mencionados anteriormente en la descripción técnica.

Montaje
Durante el montaje del instrumento, por favor tenga en cuenta:

- Hay que evitar daños mecánicos en el instrumento
- Hay que evitar fricción mecánica

Mantenimiento
Para asegurar el funcionamiento del instrumento se recomienda realizar un control visual periódico de los siguientes puntos:

- Montaje seguro
- Ningún deterioro mecánico o corrosión
- Líneas desgastadas o dañadas de otra manera
- Ninguna conexión floja de las conexiones de los cables, conexiones de compensación de potencial
- Conexiones de líneas marcadas de forma clara y correcta

Seguridad intrínseca "i"

- Observar las normas vigentes para la interconexión de circuitos de seguridad intrínseca.
- El equipo sólo es adecuado para la conexión a instrumentos de seguridad intrínseca certificados
- Si el circuito con seguridad intrínseca es conducido por áreas con riesgo de explosión a causa de los polvos las zonas 20 o 21, hay que asegurar que los medios de producción a conectar en esos circuitos, cumplan con los requisitos de las categorías 1D (Medio de producción EPL Da) o 2D (Medio de producción EPL Db) y estén certificados correspondientemente

8 Datos eléctricos

VEGAMET 141, 142

Circuito sin seguridad intrínseca.

Circuito de alimentación:	
Terminales 91[+, L], 92[-, N]	U = 24 … 65 V DC (-15 … +10 %) P = 3 W (VEGAMET 141), 4 W (VEGAMET 142) U = 100 … 230 V AC (-15 … +10 %), 50/60 Hz P = 10 VA (VEGAMET 141), 12 VA (VEGAMET 142) U_m = 253 V AC

Salida de relé:	
Relé 1: Terminales 61, 62, 63	1 A AC (cos phi > 0,9), 250 V AC, 250 VA
Relé 2: Terminales 64, 65, 66	1 A DC, 60 V DC, 40 W
Relé 3: Terminales 67, 68, 69	U_m = 253 V AC

Circuito de salida de corriente:	
I_{out} 1, Terminales 41[+], 42[-]	I = 0/4 … 20 mA
Adicional sólo VEGAMET 142:	U ≤ 16 V DC
I_{out} 2, Terminales 43[+], 44[-]	Carga ≤ 500 Ohm
	U_m = 253 V AC

Circuito con seguridad intrínseca

Circuito de alimentación y señal.	
Sensor de 4 … 20 mA 1: bornes 1[+], 2[-], Enchufe de servicio [1HART]	En tipo de protección seguridad intrínseca Ex ia IIC, IIB/IIIC.
Adicional sólo VEGAMET 142:	Para la conexión a un circuito con seguridad intrínseca certificado.
Sensor de 4 … 20 mA 2: bornes 4[+], 5[-], Enchufe de servicio [2HART]	U_o ≤ 23,3 V DC I_o ≤ 109,8 mA P_o ≤ 639,6 mW
	Curva característica: lineal
	C_i despreciablemente pequeña L_i despreciablemente pequeña
	Los valores máximos indicados en la tabla se pueden utilizar como capacidades e inductividades concentradas. Los valores para IIC y IIB también son admisibles para zonas con peligro de explosión por polvo.

Ex ia	**IIC**		**IIB, IIIC**		**IIA**
Inductividad externa permisible L_o	0,2 mH	0,5 mH	0,5 mH	2 mH	10 mH
Capacidad externa permisible C_o	120 nF	88 nF	580 nF	470 nF	770 nF
Relación externa permitida L_o/R_o	55 µH/Ohm	55 µH/Ohm	221 µH/ Ohm	221 µH/ Ohm	443 µH/ Ohm

Los conectores de servicio H ART1 y HART2 están directamente conectados a los terminales de

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salida con seguridad intrínseca (1, 2 y 4, 5). La seguridad intrínseca de la combinación del comunicador HART con seguridad intrínseca (por ejemplo, VEGACONNECT) y el instrumento conectado con seguridad intrínseca debe ser evaluada como parte del diseño del sistema.

Los circuitos de seguridad intrínseca del VEGAMET 141, 142 están separados galvánicamente de la tierra.

Los circuitos de seguridad intrínseca del VEGAMET 141, 142 están separados con seguridad de los circuitos de seguridad no intrínseca hasta un valor máximo de 375 V.

La tensión máxima en los circuitos sin seguridad intrínseca no debe superar los 253 Vrms en caso de fallo.

9 Datos mecánicos

Los siguientes datos mecánicos se aplican a todas las versiones de carcasas y electrónicas.

Datos mecánicos	
Grado de protección (IEC/EN 60529)	IP20
Sección de cable	0,25 … 2,5 mm²
Categoría de sobretensión	II
Grado de contaminación	2

10 Datos térmicos

Temperaturas ambientales homologadas

Temperatura ambiente permisible en el lugar de montaje de un equipo	**Temperatura ambiente (Ta)**
como material correspondient	-20 … +60 °C (-4 … +140 °F)

11 Instalación

Los controladores VEGAMET 141, 142 como equipo asociado se deben montar y utilizar fuera de las zonas peligrosas.

Si el circuito con seguridad intrínseca es conducido por áreas con riesgo de explosión a causa de los polvos las zonas 20 o 21, hay que asegurar que los medios de producción a conectar en esos circuitos, cumplan con los requisitos de las categorías 1D (Medio de producción EPL Da) o 2D (Medio de producción EPL Db) y estén certificados correspondientemente.

Druckdatum:

Die Angaben über Lieferumfang, Anwendung, Einsatz und Betriebsbedingungen der Sensoren und Auswertsysteme entsprechen den zum Zeitpunkt der Drucklegung vorhandenen Kenntnissen.
Änderungen vorbehalten

63696-01-201218

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ATEX

Safety instructions
VEGAMET 141, 142

Installation in non-Ex area
with output intrinsic safety "i"

UK CA 0891

Document ID: 63696

VEGA

UKEX

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Supplementary documentation:

- Operating Instructions VEGAMET 141, 142
- UK Type Examination Certificate UL21UKEX2282X (Document ID: 66338)
- UK Declaration of Conformity (Document ID: 66290)

Editing status: 2021-09-01

63696-EN-211029

DE	Sicherheitshinweise für den Einsatz in explosionsgefährdeten Bereichen
EN	Safety instructions for the use in hazardous areas
FR	Consignes de sécurité pour une application en atmosphères explosibles
IT	Normative di sicurezza per l'impiego in luoghi con pericolo di esplosione
ES	Instrucciones de seguridad para el empleo en áreas con riesgo de explosión
PT	Normas de segurança para utilização em zonas sujeitas a explosão
NL	Veiligheidsaanwijzingen voor gebruik op plaatsen waar ontploffingsgevaar kan heersen
SV	Säkerhetsanvisningar för användning i explosiionsfarliga områden
DA	Sikkerhedsforskrifter til anvendelse i explosionsfarlig atmosfare
FI	Turvallisuusohjeet räjähdysvaarallisisssa tiloissa käyttöä varten
EL	Υποδείξεις ασΦαλείας για τη χρησιμοποίηση σε περιοχές που υπάρχει κίνδυνος έκρηξης

DE	Die vorliegenden Sicherheitshinweise sind im Download unter www.vega.com standardmäßig in den Sprachen deutsch, englisch, französisch und spanisch verfügbar. Weitere EU-Landessprachen stellt VEGA nach Anforderungen zur Verfügung.
EN	These safety instructions are available as a standard feature in the download area under www.vega.com in the languages German, English, French and Spanish. Further EU languages will be made available by VEGA upon request.
FR	Les présentes consignes de sécurité sont disponibles au téléchargement sous www.vega.com en standard en allemand, en anglais, en francais et en espagnol. VEGA met à disposition d'autres langues de l'Union Européenne selon les exigences.
ES	Las indicaciones de seguridad presentes están disponibles en la zona de descarga de www.vega.com de forma estándar en los idiomas inglés, francés y español. VEGA pone a disposición otros idiomas de la UE cuando son requeridos.

1 Area of applicability

These safety instructions apply to the devices:

- VEGAMET 141
- VEGAMET 142

In accordance with the UK Type Examination Certificate UL21UKEX2282X, as associated equipment (certificate number on type plate) and for all devices with safety instruction 63696.

The classification as well as the respective standards are stated in the above certificates:

Type of protection marking:

- II (1) G [Ex ia Ga] IIC
- II (1) D [Ex ia Da] IIIC

2 Device configuration/-properties

The detailed device configurations can be retrieved using the serial number search on our homepage.

Move to " www.vega.com" and enter in the search field the serial number of your instrument.

Alternatively, you can find all via your smartphone:

- Download the VEGA Tools app from the " *Apple App Store*", " *Google Play Store*" or " *Baidu Store*"
- Scan the DataMatrix code on the type label of the instrument or
- Enter the serial number manually in the app

3 General information

The single and double channel controllers VEGAMET 141, 142 are ideal for simple control tasks in all industrial areas for non-Ex or Ex applications for the connection of one or two 4 … 20 mA sensors.

They serve as a display for continuous sensors and can also be used as a (Ex)power supply unit for the connected sensors.

The setting can be easily done on site using manual operation or remotely using smartphone/tablet and PC/Laptop using Bluetooth Smart.

There are no other interfaces on the controllers. The devices can be used in the switching cabinet.

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.

4 Application area, use in gas and dust atmospheres

Associated apparatus

The VEGAMET 141, 142 may be installed and operated outside of hazardous areas as associated equipment.

5 Specific conditions of use for safe operating mode

The following overview is listing all special properties of VEGAMET 141, 142, which make a labelling with the symbol "X" behind the certificate number necessary.

Mounting options

The VEGAMET 141, 142 must be mounted vertically.

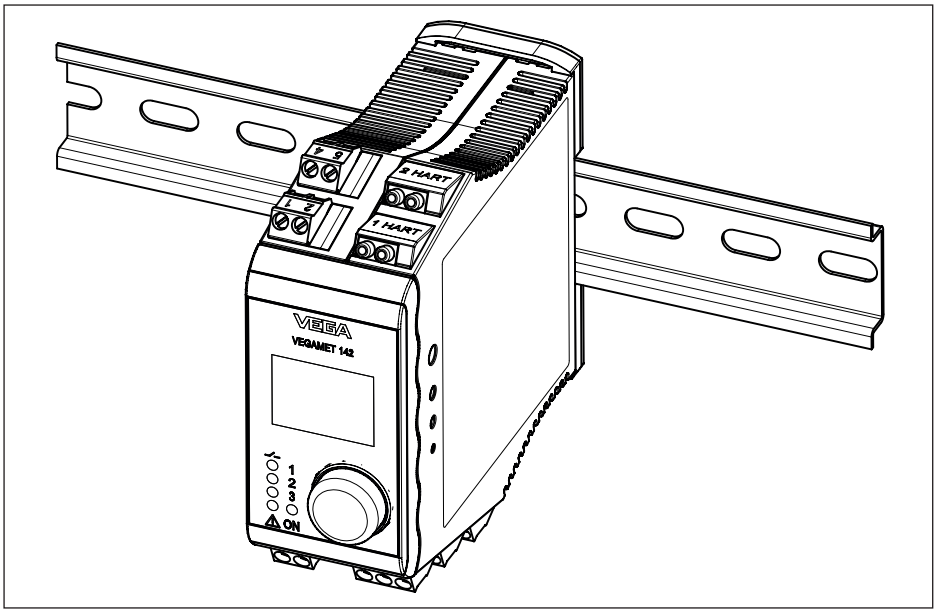

Fig. 1: VEGAMET 141, 142 on carrier rail

Ambient temperature
The installer must ensure that the rated ambient temperature range of the device is not exceeded when it is installed in a housing together with other devices and that adequate separation is provided around the device.

Communication, service
The service sockets HART1, HART2 are parallel to the intrinsically safe output terminals 1, 2 or 4, 5.

6 Safe operating mode

General operating conditions
- Do not operate the instrument outside the electrical, thermal and mechanical specifications of the manufacturer

Connection conditions
- The connection cable of VEGAMET 141, 142 has to be wired fix and in such a way that damages can be excluded
- If the temperature at the entry parts exceeds 70 °C, temperature-resistant connection cables must be used

7 Important information for mounting and maintenance

General instructions
The following requirements must be fulfilled for mounting, electrical installation, setup and maintenance of the instrument:
- The staff must be qualified according the respective tasks

- The staff must be trained in explosion protection
- The staff must be familiar with the respectively valid regulations, e.g. planning and installation acc. to EN 60079-14
- Make sure when working on the instrument (mounting, installation, maintenance) that there is no explosive atmosphere present, the supply circuits should be voltage-free, if possible.
- The instrument has to be mounted according to the manufacturer specifications, the UK Type Examination Certificate and the valid regulations and standards
- Modifications on the instrument can influence the explosion protection and hence the safety, therefore repairs are not permitted to be conducted by the end user
- Modifications must only be carried out by employees authorized by VEGA company
- Use only approved spare parts
- Components for installation and connection not included in the approval documents are only permitted if these correspond technically to the latest standard mentioned on the cover sheet. They must be suitable for the application conditions and have a separate certificate. The special conditions of the components must be noted and if necessary, the components must be integrated in the type test. This applies also to the components already mentioned in the technical description.

Mounting

Keep in mind for instrument mounting

- Mechanical damage on the instrument must be avoided
- Mechanical friction must be avoided

Maintenance

To ensure the functionality of the device, periodic visual inspection is recommended for:

- Secure mounting
- No mechanical damages or corrosion
- Worn or otherwise damaged cables
- No loose connections of the line connections, equipotential bonding connections
- Correct and clearly marked cable connections

Intrinsic safety "i"

- Observe the valid regulations for the interconnection of intrinsically safe circuits.
- The instrument is only suitable for connection to certified, intrinsically safe instruments
- 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 category 1D (EPL Da instruments) or 2D (EPL Db instruments) and are certified respectively

8 Electrical data

VEGAMET 141, 142

Non-intrinsically safe circuit

Supply circuit:	
Terminals 91[+, L], 92[-, N]	U = 24 … 65 V DC (-15 … +10 %) P = 3 W (VEGAMET 141), 4 W (VEGAMET 142) U = 100 … 230 V AC (-15 … +10 %), 50/60 Hz P = 10 VA (VEGAMET 141), 12 VA (VEGAMET 142) U_m = 253 V AC

Relay output:	
Relay 1: terminals 61, 62, 63	1 A AC (cos phi > 0.9), 250 V AC, 250 VA
Relay 2: terminals 64, 65, 66	1 A DC, 60 V DC, 40 W
Relay 3: terminals 67, 68, 69	U_m = 253 V AC

Current output circuit:	
I_{out} 1, terminals 41[+], 42[-]	I = 0/4 … 20 mA
In addition only VEGAMET 142:	U ≤ 16 V DC
I_{out} 2, terminals 43[+], 44[-]	Load ≤ 500 Ohm
	U_m = 253 V AC

Intrinsically safe circuit

Supply and signal circuit:	
4 … 20 mA sensor 1: Terminals 1[+], 2[-], Service socket [HART1] In addition only VEGAMET 142: 4 … 20 mA sensor 2: Terminals 4[+], 5[-], Service socket [HART2]	In type of protection intrinsic safety Ex ia IIC, IIB/IIIC.
	For connection to a certified, intrinsically safe circuit. U_o ≤ 23.3 V DC I_o ≤ 109.8 mA P_o ≤ 639.6 mW
	Characteristics: linear
	C_i negligibly small L_i negligibly small
	The maximum values given in the table can be used as concentrated capacitances and concentrated inductances. The values for IIC and IIB are also permissible for dust explosive areas.

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

The HART1 and HART2 service sockets are directly connected to the intrinsically safe output terminals (1, 2 and 4, 5). The intrinsic safety of the combination of intrinsically safe HART communicator (e.g. VEGACONNECT) and connected intrinsically safe device must be evaluated as part of the system design.

The intrinsically safe circuits of VEGAMET 141, 142 are galvanically separated from ground.

The intrinsically safe circuits of the VEGAMET 141, 142 are reliably separated from the non-intrinsically safe circuit up to a peak value of 375 V.

The maximum voltage on the non-intrinsically safe circuits must not exceed 253 Vrms in the event of a fault.

9 Mechanical data

The following mechanical data are valid for all housing and electronics versions.

Mechanical data	
Protection (IEC/EN 60529)	IP20
Connection cross-section:	0.25 … 2.5 mm²
Overvoltage category	II
Pollution degree	2

10 Thermal data

Permissible ambient temperatures

Permissible ambient temperature at the installation location of an instrument	**Ambient temperature (Ta)**
As associated equipment	-20 … +60 °C (-4 … +140 °F)

11 Installation

Controllers VEGAMET 141, 142 as associated equipment must be mounted and operated outside hazardous areas.

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 category 1D (EPL Da instruments) or 2D (EPL Db instruments) and are certified respectively.

Printing date:

All statements concerning scope of delivery, application, practical use and operating conditions of the sensors and processing systems correspond to the information available at the time of printing.
Subject to change without prior notice

63696-EN-211029

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UKEX

Safety instructions
VEGAMET 141, 142

Installation in non-Ex area
with output intrinsic safety "i"

Document ID: 63696

IECEx

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Supplementary documentation:

- Operating Instructions VEGAMET 141, 142
- Certificate of Conformity IECEx UL 20.0028 X (Document ID: 63698)

Editing status: 2020-01-28

63696-EN-201216

1 Area of applicability

These safety instructions apply to the devices:

- VEGAMET 141
- VEGAMET 142

In accordance with the IECEx Certificate of Conformity IECEx UL 20.0028 X, as associated equipment (certificate number on type plate) and for all devices with safety instruction 63696.

The classification as well as the respective standards are stated in the above certificates:

Type of protection marking:

- [Ex ia Ga] IIC
- [Ex ia Da] IIIC

2 Device configuration/-properties

The detailed device configurations can be retrieved using the serial number search on our homepage.

Move to " www.vega.com" and enter in the search field the serial number of your instrument.

Alternatively, you can find all via your smartphone:

- Download the VEGA Tools app from the " *Apple App Store*", " *Google Play Store*" or " *Baidu Store*"
- Scan the DataMatrix code on the type label of the instrument or
- Enter the serial number manually in the app

3 General information

The single and double channel controllers VEGAMET 141, 142 are ideal for simple control tasks in all industrial areas for non-Ex or Ex applications for the connection of one or two 4 … 20 mA sensors.

They serve as a display for continuous sensors and can also be used as a (Ex)power supply unit for the connected sensors.

The setting can be easily done on site using manual operation or remotely using smartphone/tablet and PC/Laptop using Bluetooth Smart.

There are no other interfaces on the controllers. The devices can be used in the switching cabinet.

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.

4 Application area, use in gas and dust atmospheres

Associated apparatus

The VEGAMET 141, 142 may be installed and operated outside of hazardous areas as associated equipment.

5 Specific conditions of use for safe operating mode

The following overview is listing all special properties of VEGAMET 141, 142, which make a labelling with the symbol "X" behind the certificate number necessary.

Mounting options

The VEGAMET 141, 142 must be mounted vertically.

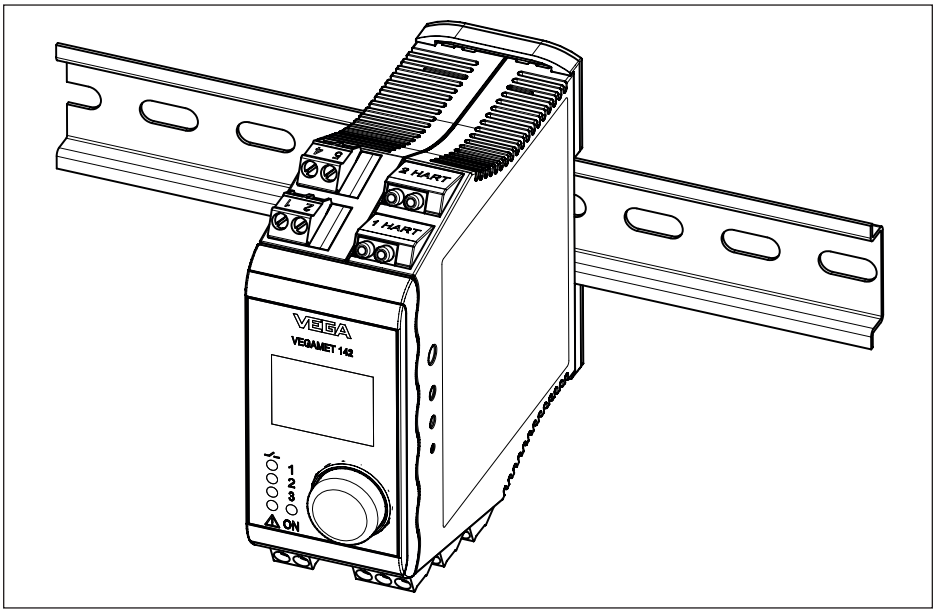

Fig. 1: VEGAMET 141, 142 on carrier rail

Ambient temperature
The installer must ensure that the rated ambient temperature range of the device is not exceeded when it is installed in a housing together with other devices and that adequate separation is provided around the device.

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

6 Safe operating mode

General operating conditions
- Do not operate the instrument outside the electrical, thermal and mechanical specifications of the manufacturer

Connection conditions
- The connection cable of VEGAMET 141, 142 has to be wired fix and in such a way that damages can be excluded
- If the temperature at the entry parts exceeds 70 °C, temperature-resistant connection cables must be used

7 Important information for mounting and maintenance

General instructions
The following requirements must be fulfilled for mounting, electrical installation, setup and maintenance of the instrument:

- The staff must be qualified according the respective tasks

- The staff must be trained in explosion protection
- The staff must be familiar with the respectively valid regulations, e.g. planning and installation acc. to IEC 60079-14
- Make sure when working on the instrument (mounting, installation, maintenance) that there is no explosive atmosphere present, the supply circuits should be voltage-free, if possible.
- The instrument has to be mounted according to the manufacturer specifications, the Certificate of Conformity and the valid regulations and standards
- Modifications on the instrument can influence the explosion protection and hence the safety, therefore repairs are not permitted to be conducted by the end user
- Modifications must only be carried out by employees authorized by VEGA company
- Use only approved spare parts
- Components for installation and connection not included in the approval documents are only permitted if these correspond technically to the latest standard mentioned on the cover sheet. They must be suitable for the application conditions and have a separate certificate. The special conditions of the components must be noted and if necessary, the components must be integrated in the type test. This applies also to the components already mentioned in the technical description.

Mounting

Keep in mind for instrument mounting

- Mechanical damage on the instrument must be avoided
- Mechanical friction must be avoided

Maintenance

To ensure the functionality of the device, periodic visual inspection is recommended for:

- Secure mounting
- No mechanical damages or corrosion
- Worn or otherwise damaged cables
- No loose connections of the line connections, equipotential bonding connections
- Correct and clearly marked cable connections

Intrinsic safety "i"

- Observe the valid regulations for the interconnection of intrinsically safe circuits.
- The instrument is only suitable for connection to certified, intrinsically safe instruments
- If the intrinsically safe circuit is lead into dust-explosive areas of zone 20 or 21, please make sure that the instruments which are connected to these circuits meet the requirements of EPL Da or EPL Db and are certified respectively

8 Electrical data

VEGAMET 141, 142

Non-intrinsically safe circuit

Supply circuit:	
Terminals 91[+, L], 92[-, N]	U = 24 … 65 V DC (-15 … +10 %) P = 3 W (VEGAMET 141), 4 W (VEGAMET 142) U = 100 … 230 V AC (-15 … +10 %), 50/60 Hz P = 10 VA (VEGAMET 141), 12 VA (VEGAMET 142) U_m = 253 V AC

Relay output:	
Relay 1: terminals 61, 62, 63 Relay 2: terminals 64, 65, 66 Relay 3: terminals 67, 68, 69	1 A AC (cos phi > 0.9), 250 V AC, 250 VA 1 A DC, 60 V DC, 40 W U_m = 253 V AC

Current output circuit:	
I_{out} 1, terminals 41[+], 42[-] In addition only VEGAMET 142: I_{out} 2, terminals 43[+], 44[-]	I = 0/4 … 20 mA U ≤ 16 V DC Load ≤ 500 Ohm U_m = 253 V AC

Intrinsically safe circuit

Supply and signal circuit:	
4 … 20 mA sensor 1: Terminals 1[+], 2[-], Service socket [1HART] In addition only VEGAMET 142: 4 … 20 mA sensor 2: Terminals 4[+], 5[-], Service socket [2HART]	In type of protection intrinsic safety Ex ia IIC, IIB/IIIC.
	For connection to a certified, intrinsically safe circuit. U_o ≤ 23.3 V DC I_o ≤ 109.8 mA P_o ≤ 639.6 mW
	Characteristics: linear
	C_i negligibly small L_i negligibly small
	The maximum values given in the table can be used as concentrated capacitances and concentrated inductances. The values for IIC and IIB are also permissible for dust explosive areas.

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

The HART1 and HART2 service sockets are directly connected to the intrinsically safe output terminals (1, 2 and 4, 5). The intrinsic safety of the combination of intrinsically safe HART communicator (e.g. VEGACONNECT) and connected intrinsically safe device must be evaluated as part of the system design.

The intrinsically safe circuits of VEGAMET 141, 142 are galvanically separated from ground.

The intrinsically safe circuits of the VEGAMET 141, 142 are reliably separated from the non-intrinsically safe circuit up to a peak value of 375 V.

The maximum voltage on the non-intrinsically safe circuits must not exceed 253 Vrms in the event of a fault.

9 Mechanical data

The following mechanical data are valid for all housing and electronics versions.

Mechanical data	
Protection (IEC/EN 60529)	IP20
Connection cross-section:	0.25 … 2.5 mm²
Overvoltage category	II
Pollution degree	2

10 Thermal data

Permissible ambient temperatures

Permissible ambient temperature at the installation location of an instrument	**Ambient temperature (Ta)**
As associated equipment	-20 … +60 °C (-4 … +140 °F)

11 Installation

Controllers VEGAMET 141, 142 as associated equipment must be mounted and operated outside hazardous areas.

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 the device protection level (EPL) Da or Db and are certified respectively.

Printing date:

63696-EN-201216

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Safety instructions
VEGAMET 141, 142

Installation in non-Ex area
with output intrinsic safety "i"

Document ID: 63696

VEGA

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Supplementary documentation:

- Operating Instructions VEGAMET 141, 142
- Certificate of Compliance cULus E490658 (Document ID: 63699)

Editing status: 2021-02-18

63696-EN-210721

c-UL-us

1 Area of applicability

These safety instructions apply to the devices:

- VEGAMET 141
- VEGAMET 142

In accordance with the Certificate of Compliance cULus E490658, as associated equipment (certificate number on type plate) and for all devices with safety instruction 63696.

The classification as well as the respective standards are stated in the above certificates:

Type of protection marking:

- Associated Apparatus for use in Unclassified Locations, providing IS circuits for use in Hazardous Location Class I, Division 1, Groups A, B, C, D, Class II, Division 1, Groups E, F, G, Class III ,Class I, Zone 0 Group IIC , Zone 20 Group IIIC
- [Ex ia Ga] IIC X, [Ex ia Da] IIIC X
- [AEx ia Ga] IIC, [AEx ia Da] IIIC

2 Device configuration/-properties

The detailed device configurations can be retrieved using the serial number search on our homepage.

Move to " www.vega.com" and enter in the search field the serial number of your instrument.

Alternatively, you can find all via your smartphone:

- Download the VEGA Tools app from the " *Apple App Store*", " *Google Play Store*" or " *Baidu Store*"
- Scan the DataMatrix code on the type label of the instrument or
- Enter the serial number manually in the app

3 General information

The single and double channel controllers VEGAMET 141, 142 are ideal for simple control tasks in all industrial areas for non-Ex or Ex applications for the connection of one or two 4 … 20 mA sensors.

They serve as a display for continuous sensors and can also be used as a (Ex)power supply unit for the connected sensors.

The setting can be easily done on site using manual operation or remotely using smartphone/tablet and PC/Laptop using Bluetooth Smart.

There are no other interfaces on the controllers. The devices can be used in the switching cabinet.

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.

4 Application area, use in gas and dust atmospheres (zones and divisions)

Associated apparatus

The VEGAMET 141, 142 may be installed and operated outside of hazardous areas as associated equipment.

5 Specific conditions of use for safe operating mode

The following overview is listing all special properties of VEGAMET 141, 142, which make a label-

ling with the symbol "X" behind the certificate number necessary.

Mounting options
The VEGAMET 141, 142 must be mounted vertically.

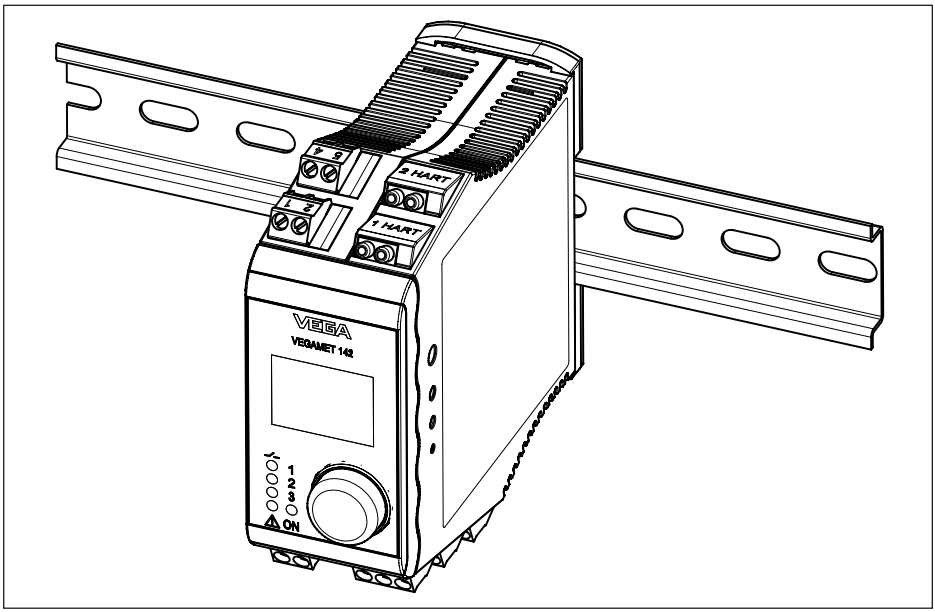


Fig. 1: VEGAMET 141, 142 on carrier rail

Ambient temperature
The installer must ensure that the rated ambient temperature range of the device is not exceeded when it is installed in a housing together with other devices and that adequate separation is provided around the device.

Communication, service
The service sockets HART1, HART2 are parallel to the intrinsically safe output terminals 1, 2 or 4, 5.

6 Safe operating mode

General operating conditions
- Do not operate the instrument outside the electrical, thermal and mechanical specifications of the manufacturer

Connection conditions
- The connection cable of VEGAMET 141, 142 has to be wired fix and in such a way that damages can be excluded
- If the temperature at the entry parts exceeds 70 °C, temperature-resistant connection cables must be used

7 Important information for mounting and maintenance

General instructions

The following requirements must be fulfilled for mounting, electrical installation, setup and maintenance of the instrument:

- The staff must be qualified according the respective tasks
- The staff must be trained in explosion protection
- The staff must be familiar with the respectively valid regulations, e.g. planning and installation acc. to ANSI/ISA RP12.06.01 „Installation of Intrinsically Safe Systems for Hazardous (Classifies) Locations“ and the National Electrical Code® (ANSI/NFPA 70) or Canadian Electrical Code
- Make sure when working on the instrument (mounting, installation, maintenance) that there is no explosive atmosphere present, the supply circuits should be voltage-free, if possible.
- The instrument has to be mounted according to the manufacturer specifications, the Certificate of Conformity and the valid regulations and standards
- Modifications on the instrument can influence the explosion protection and hence the safety, therefore repairs are not permitted to be conducted by the end user
- Modifications must only be carried out by employees authorized by VEGA company
- Use only approved spare parts
- Components for installation and connection not included in the approval documents are only permitted if these correspond technically to the latest standard mentioned on the cover sheet. They must be suitable for the application conditions and have a separate certificate. The special conditions of the components must be noted and if necessary, the components must be integrated in the type test. This applies also to the components already mentioned in the technical description.

Mounting

Keep in mind for instrument mounting

- Mechanical damage on the instrument must be avoided
- Mechanical friction must be avoided

Maintenance

To ensure the functionality of the device, periodic visual inspection is recommended for:

- Secure mounting
- No mechanical damages or corrosion
- Worn or otherwise damaged cables
- No loose connections of the line connections, equipotential bonding connections
- Correct and clearly marked cable connections

Intrinsic safety "i"

- Observe the valid regulations for connection of intrinsically safe circuits, e.g. proof of intrinsic safety in accordance with ANSI/ISA RP12.06.01 „Installation of Intrinsically Safe Systems for Hazardous (Classifies) Locations“ and the National Electrical Code® (ANSI/NFPA 70) or Canadian Electrical Code.
- The instrument is only suitable for connection to certified, intrinsically safe instruments
- If the intrinsically safe circuit is led into dust-explosive areas of zone 20, 21 or Div 1, Div 2, please make sure that the instruments connected to these circuits meet the requirements of the device protection level (EPL) Da, Db or Div 1, Div 2 and are certified respectively

8 Electrical data

VEGAMET 141, 142

Non-intrinsically safe circuit

Supply circuit:	
Terminals 91[+, L], 92[-, N]	U = 24 … 65 V DC (-15 … +10 %) P = 3 W (VEGAMET 141), 4 W (VEGAMET 142) U = 100 … 230 V AC (-15 … +10 %), 50/60 Hz P = 10 VA (VEGAMET 141), 12 VA (VEGAMET 142) U_m = 253 V AC

Relay output:	
Relay 1: terminals 61, 62, 63	1 A AC (cos phi > 0.9), 250 V AC, 250 VA
Relay 2: terminals 64, 65, 66	1 A DC, 60 V DC, 40 W
Relay 3: terminals 67, 68, 69	U_m = 253 V AC

Current output circuit:	
I_{out} 1, terminals 41[+], 42[-] In addition only VEGAMET 142: I_{out} 2, terminals 43[+], 44[-]	I = 0/4 … 20 mA U ≤ 16 V DC Load ≤ 500 Ohm U_m = 253 V AC

Intrinsically safe circuit

Supply and signal circuit:	
4 … 20 mA sensor 1: Terminals 1[+], 2[-], Service socket [HART1] In addition only VEGAMET 142: 4 … 20 mA sensor 2: Terminals 4[+], 5[-], Service socket [HART2]	In type of protection intrinsic safety Ex ia IIC, IIB/IIIC.
	For connection to a certified, intrinsically safe circuit. U_o/V_{oc} ≤ 23.3 V DC I_o/I_{sc} ≤ 109.8 mA P_o ≤ 639.6 mW
	Characteristics: linear
	C_i negligibly small L_i negligibly small
	The maximum values given in the table can be used as concentrated capacitances and concentrated inductances. The values for IIC and IIB are also permissible for dust explosive areas.

Ex ia	**IIC, Grp A, B**		**IIB, Grp C or IIIC, Grp E, F, G**		**IIA, Grp D**
Permissible external inductance L_o/L_a	0.2 mH	0.5 mH	0.5 mH	2 mH	10 mH
Permissible external capacitance C_o/C_a	120 nF	88 nF	580 nF	470 nF	770 nF
Permissible outer L_o/R_o-ratio	55 µH/Ohm	55 µH/Ohm	221 µH/ Ohm	221 µH/ Ohm	443 µH/ Ohm

The HART1 and HART2 service sockets are directly connected to the intrinsically safe output termi-

nals (1, 2 and 4, 5). The intrinsic safety of the combination of intrinsically safe HART communicator (e.g. VEGACONNECT) and connected intrinsically safe device must be evaluated as part of the system design.

The intrinsically safe circuits of VEGAMET 141, 142 are galvanically separated from ground.

The intrinsically safe circuits of the VEGAMET 141, 142 are reliably separated from the non-intrinsically safe circuit up to a peak value of 375 V.

The maximum voltage on the non-intrinsically safe circuits must not exceed 253 Vrms in the event of a fault.

9 Mechanical data

The following mechanical data are valid for all housing and electronics versions.

Mechanical data	
Protection (IEC/EN 60529)	IP20
Connection cross-section:	0.25 … 2.5 mm²
Overvoltage category	II
Pollution degree	2

10 Thermal data

Permissible ambient temperatures

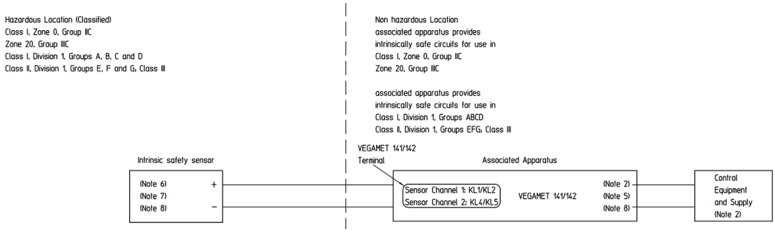
Permissible ambient temperature at the installation location of an instrument	**Ambient temperature (Ta)**
As associated equipment	-20 … +60 °C (-4 … +140 °F)

11 Installation

Controllers VEGAMET 141, 142 as associated equipment must be mounted and operated outside hazardous areas.

If the intrinsically safe circuit is led into dust-explosive areas of zone 20, 21 or Div 1, Div 2, please make sure that the instruments connected to these circuits meet the requirements of the device protection level (EPL) Da, Db or Div 1, Div 2 and are certified respectively.

12 Control drawing VEGAMET 141, 142



VEGAMET 141, 142

Terminal connection cross-section:	0.25 … 2.5 mm²
Terminal torque:	0.4 … 5 Nm

c-UL-us

Ambient temperature range:	-20 … +60 °C

Supply circuit:	
Terminals 91[+, L], 92[-, N]	U = 24 … 65 V DC P = 3 W (VEGAMET 141), 4 W (VEGAMET 142) U = 100 … 230 V AC, 50/60 Hz P = 10 VA (VEGAMET 141), 12 VA (VEGAMET 142) U_m = 253 V AC

Relay output:	
Relay 1: terminals 61, 62, 63 Relay 2: terminals 64, 65, 66 Relay 3: terminals 67, 68, 69	1 A AC (cos phi > 0.9), 250 V AC, 250 VA 1 A DC, 60 V DC, 40 W U_m = 253 V AC

Current output circuit:	
I_{out} 1, terminals 41[+], 42[-] In addition only VEGAMET 142: I_{out} 2, terminals 43[+], 44[-]	I = 0/4 … 20 mA U ≤ 16 V DC Load ≤ 500 Ohm U_m = 253 V AC

Supply and signal circuit:	
4 … 20 mA sensor 1: Terminals 1[+], 2[-], Service socket [HART1] In addition only VEGAMET 142: 4 … 20 mA sensor 2: Terminals 4[+], 5[-], Service socket [HART2]	In type of protection intrinsic safety Ex ia IIC, IIB/IIIC.
	For connection to a certified, intrinsically safe circuit. U_o/V_{oc} ≤ 23.3 V DC I_o/I_{sc} ≤ 109.8 mA P_o ≤ 639.6 mW
	Characteristics: linear
	C_i negligibly small L_i negligibly small

The maximum values of Lo/La, Co/Ca from the table apply, when circuits are connected.

With combined inductances and capacitances considered as concentrated reactances.

Ex ia	**IIC, Grp A, B**		**IIB, Grp C or IIIC, Grp E, F, G**		**IIA, Grp D**
Permissible external inductance L_o/L_a	0.2 mH	0.5 mH	0.5 mH	2 mH	10 mH
Permissible external capacitance C_o/C_a	120 nF	88 nF	580 nF	470 nF	770 nF
Permissible outer L_o/R_o-ratio	55 µH/Ohm	55 µH/Ohm	221 µH/ Ohm	221 µH/ Ohm	443 µH/ Ohm

The values of the following table are the maximum values acc. UL60079-11 Annex A and can be used up to the permissible limits as distributed reactances.

For installations in which both the Ci and Li of the intrinsically safe apparatus exceeds 1 % of the Ca (or Co) and La (or Lo) parameters of the associated apparatus (excluding the cable), then 50 % of Ca (or Co) and La (or Lo) parameters are applicable and shall not be exceeded. The reduced capacitance shall not be greater than 1 µF for Groups C and/or D, and 600 nF for Groups A and B. Alternatively refer to the table for combined inductances and capacitances above.

Ex ia	IIC, Grp A, B	IIB, Grp C or IIIC, Grp E, F, G	IIA, Grp D
Max. permissible external inductance L_o/L_a	2.94 mH	11.76 mH	23.6 mH
Max. permissible external capacitance C_o/C_a	136 nF	1000 nF	3600 nF

Notes:

1. The Intrinsic Safety Entity concept allows the interconnection of two intrinsically safe devices, cULus certified with entity parameters, not specifically examined in combination as a system when: Uo or Voc or Vt ≤ Vmax; Io or Isc or It ≤ Imax; Po ≤ Pi; Ca or Co ≥ Ci + Ccable; La or Lo ≥ Li + Lcable

2. Control equipment connected to the Associated Apparatus shall not use or generate more than 250 Vrms or Vdc with respect to earth.

3. Installation shall be in accordance with ANSI/ISA-RP12.06.01 “Intrinsic Safety Wiring Methods for Hazardous (Classified) Locations Instrumentation” and the Canadian Electrical Code for Canada or the National Electrical Code for the US or other local codes, as applicable.

4. Capacitance and inductance of the field wiring from the intrinsically safe equipment to the barrier shall be calculated and has to be included in the system calculations. Cable capacitance (Ccable) plus intrinsically safe equipment capacitance (Ci) must be less than the marked capacitance (Ca) shown on any barrier used. The same applies for inductance (Lc, Li and La, respectively). Where the cable capacitance and inductance per foot are not known, the following values shall be used for two or three core cables: Ccable = 60 pF/ft, Lcable = 0.2 uH/ft.

5. Associated apparatus must be installed in an enclosure suitable for the application in accordance with the National Electrical Code (ANSI/NFPA 70) for installation in the US, the Canadian Electrical Code for installations in Canada, or other local codes, as applicable.

6. The configuration of Field device must be cULus/FM/CSA listed under Entity Concept

7. Field sensors/device manufacturer´s installation drawing shall be followed when installing this equipment

8. No revision to drawing without prior Approval by UL.

9. The installer must 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.

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

11. Live maintenance is not permitted.

12. The HART1 and HART2 service sockets are directly connected to the intrinsically safe output terminals (1, 2 and 4, 5). The intrinsic safety of the combination of intrinsically safe HART communicator (e.g. VEGACONNECT) and connected intrinsically safe device must be evaluated as part of the system design.

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