



Safety instructions

VEGASOURCE 81, 82, 83

Constructive safety "c"

Optional: Intrinsic safety "i"



Document ID: 1027866



VEGA

Contents

1	Area of applicability	4
2	Important specification in the type code	4
3	Different ignition protection types	5
4	Specific conditions of use ("X" identification)	5
5	Important information for mounting and maintenance	5
6	Safe operating mode	6
7	Potential equalization/Grounding	7
8	Electrostatic charging (ESD)	7
9	Pneumatic actuator	8
10	Position switch, terminal box	9
11	Mechanical data	10
12	Thermal data	10

Supplementary documentation:

- Operating instructions VEGASOURCE 81, 82, 83
- Certificate of deposit BVS 24 ATEX H/B 036 (Document ID: 1027867)
- EU declaration of conformity (Document ID: 1012343)

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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 explosionsfarliga områden
DA	Sikkerhedsforskrifter til anvendelse i explosionsfarlig atmosfære
FI	Turvallisuusohjeet räjähdysvaarallisissa tiloissa käytettävä 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.
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1 Area of applicability

These safety instructions apply to the devices of type series:

- VEGASOURCE 81
- VEGASOURCE 82
- VEGASOURCE 83

According to the certificate of deposit BVS 24 ATEX H/B 036 (certificate number on the type label) and for all instruments with safety instruction 1027866.

The classification as well as the respective standards are stated in the certificate of deposit:

- EN ISO 80079-36: 2016
- EN ISO 80079-37: 2016
- EN IEC 60079-0: 2018

Type of protection marking:

- II 2G Ex h IIC T6 Gb X
- II 2D Ex h IIIC T85 °C Db X

Position switches are available as an option. The classification as well as the respective standards are stated in the ATEX certificate (PTB 00 ATEX 2049 X):

- EN IEC 60079-0: 2018
- EN 60079-11: 2012

Classification mark with pneumatic actuator:

- II 2G Ex ia IIC T6...T1 Gb
- II 2D Ex ia IIIC T85 °C Db

Classification mark without pneumatic actuator:

- II 2G Ex ia IIC T6...T1 Gb
- II 2D Ex ia IIIC T95 °C Db

2 Important specification in the type code

VEGASOURCE SE8*(*).abcdefgh*ijklmnop

Position		Feature	Description
abc	Generation	***	not relevant
d	Source loading	V	provided by customer
		1	Cesium 137 (Cs-137)
efg	Source activity	XXX	No source capsule
		***	Source capsule with different activities
hj	Source capsule / Series	**	different versions
k	Exit angle	*	different exit angle between 5° and 60°
l	Material	A	316
		B	Steel (1.0619)
m	Drive	P	Pneumatic
		X, C	Manual, padlock (not within the scope of 80079-36, -37)

Position		Feature	Description
n	Additional equipment	X	without
		A	Interlock (not within the scope of 80079-36, -37)
		B	ON/OFF position switch (NAMUR)
o	Explosion protection for additional equipment	A	ATEX
		I	IECEx
p	Protective cap	X	without
		A	with

In the following, all above mentioned versions are called VEGASOURCE 81, 82, 83. If parts of these safety instructions refer only to certain versions, then these will be mentioned explicitly with their type code.

3 Different ignition protection types

The VEGASOURCE 81, 82, 83 devices can be either used in explosive dust atmospheres or in explosive gas atmospheres.

4 Specific conditions of use ("X" identification)

The following overview is listing all special properties of VEGASOURCE 81, 82, 83, which make a labelling with the symbol "X" behind the certificate number necessary.

Electrostatic charging (ESD)

You can find the details in chapter "*Electrostatic charging (ESD)*" of these safety instructions.

Ambient temperature

You can find the details in chapter "*Thermal data*" of these safety instructions.

Impact and friction sparks

The VEGASOURCE 81, 82, 83 devices in light metal versions (e.g. aluminium, titanium, zircon) must be mounted in such a way that sparks from impact and friction between light metals and steel (except stainless steel, if the presence of rust particles can be excluded) cannot occur.

Non-grounded, metallic parts

The resistance between aluminium housing to metal measuring point identification plate is $> 10^9$ Ohm.

The capacitance of the metal measuring point identification plate was measured as follows:

Measurement loop identification label	Capacitance
45 x 23 mm (standard)	21 pF
100 x 30 mm	52 pF
73 x 47 mm	61 pF

5 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/EN 60079-14
- Make sure when working on the instrument (mounting, installation, maintenance) that there is no explosive atmosphere present, if possible, switch off the power supply
- The instrument has to be mounted according to the manufacturer specifications, the certificate of deposit 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.
- Vessel installations and probable flow must be taken into account

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"

- Valid regulations for connection of intrinsically safe circuits, e.g. proof of intrinsic safety according to IEC/EN 60079-14 must be observed
- The instrument is only suitable for connection to certified, intrinsically safe instruments
- When connecting a circuit with protection level Ex ib, the device, the sensor meas. system of the device must no more be used in hazardous areas of zone 0.
- When connecting an intrinsically safe instruments with classification mark Ex ia to a circuit with protection level Ex ib, then the classification mark of the instrument changes to Ex ib. After the use as instrument with Ex ib power supply, the instrument must no more be used in circuits with protection level Ex ia
- When connecting an intrinsically safe instrument to a non-intrinsically safe circuit, the instrument must be no longer used in intrinsically safe circuits
- With surface temperatures > 70 °C, the cables must be suitable for the higher application conditions

6 Safe operating mode

General operating conditions

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

- Use the instrument only in media against which the wetted parts are sufficiently resistant
- Refer to the relevant temperature tables for permissible temperatures. See chapter "Thermal data".
- For assessment and reduction of the explosion risk, valid standards such as for example ISO/EN 1127-1 must be taken into account
- Do not disconnect the compressed air supply from the pneumatic actuator in an explosive atmosphere

7 Potential equalization/Grounding

- Integrate the instruments into the local potential equalisation, e.g. via the internal or external earth terminal, for this purpose, the mounting bracket must be electrically connected to ground potential.
- The potential equalization terminal must be secured against loosening and twisting
- If grounding of the cable screening is necessary, this must be carried out acc. to the valid standards and regulations, e.g. acc. to IEC/EN 60079-14

To ensure a good electrical contact between the VEGASOURCE 81, 82, 83 and the mounting bracket, the lock washers must be used according to the following illustration.

Use the prescribed torque for the mounting screws. Make sure that the screws have electrical contact to the potential equalization.

Material	Strength class	Torque	Friction coefficient
Stainless steel	70	50 ... 140 Nm	1.4
Steel	8.8	50 ... 140 Nm	1.4

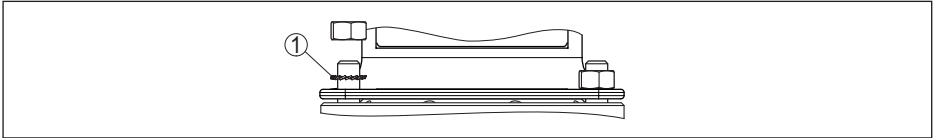


Fig. 1: Lock washers (customer side) as screw locking device and conductive connection to potential equalization
1 Lock washers (2 pieces)

8 Electrostatic charging (ESD)

In case of instrument versions with electrostatically chargeable plastic parts, the danger of electrostatic charging and discharging must be taken into account!

The following parts can charge and discharge:

- Lacquered housing version or alternative special lacquering
- Plastic housing, plastic housing parts
- Type label
- Isolated metallic labels (measuring point identification plate)

Take note in case of danger of electrostatic charges:

- Avoid friction on the surfaces
- Do not dry clean the surfaces

The instruments must be mounted/installed in such a way that the following can be ruled out:

- electrostatic charges during operation, maintenance and cleaning.
- process-related electrostatic charges, e.g. by measuring media flowing past

The warning label indicates danger:

WARNING - POTENTIAL ELECTROSTATIC
CHARGING HAZARD - SEE INSTRUCTIONS

9 Pneumatic actuator

Type of protection

Protection through design safety "c"

Operating data and safety instructions

- Operating medium: Dry or lubricated air, non-corrosive and inert gas or light hydraulic oil
- Compressed air supply: 3.5 - 6 bar. The maximum operating pressure of 6 bar must not be exceeded. A safety valve is normally recommended.
- Compressed air quality: ISO 8573-1 class 3 or better. Pressure dewpoint: 10 K below operating temperature, particle size 40 µm
- The max. compressed air temperature must not exceed the max. ambient temperature of +80 °C
- Service life of the drive: 500,000 cycles; check for wear on the drive regularly every 150,000 cycles. At the end of the service life, the drive must be replaced.
- Max. switching cycle frequency: 2 cycles per minute at a maximum of 10 cycles per hour
- Pressurized vessels with non-restricted medium must not be connected to the pneumatic actuator
- If required by the system: Implement measures against adiabatic compression and shock waves in the compressed air installation
- The check valve with choke is preset and secured with locking varnish. The setting must not be changed
- Take note of the maintenance and inspection instructions in the operating instructions manual
- Do not operate the instrument outside the thermal and mechanical specifications of the manufacturer

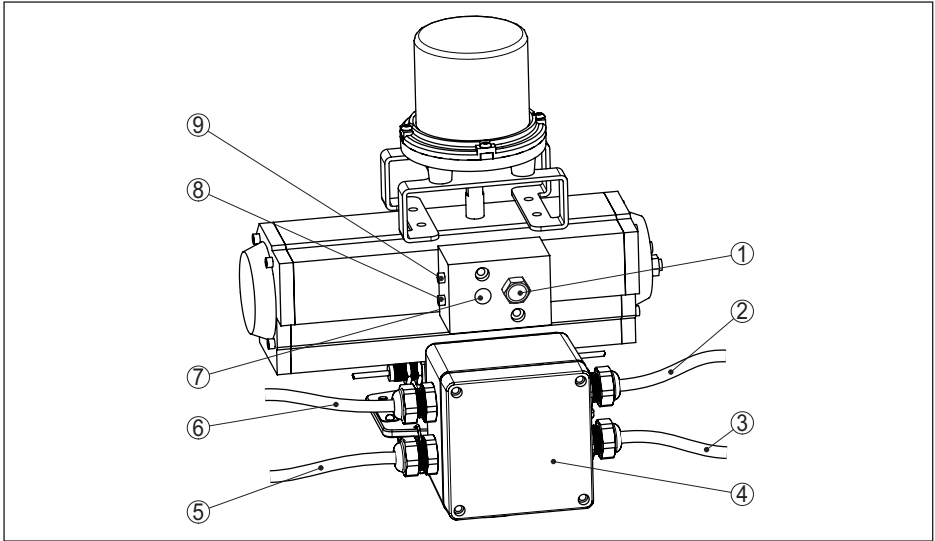


Fig. 2: Connection of the pneumatic lines on VEGASOURCE 81, 82, 83 - version B

- 1 Ventilation filter/Sound absorber
- 2 Intrinsic voltage supply
- 3 Intrinsic voltage supply
- 4 Terminal housing for connection of the ON/OFF position switches
- 5 Intrinsic ON/OFF position switch for switch position "OFF" (terminals 3 and 4)
- 6 Intrinsic ON/OFF position switch for switch position "ON" (terminals 1 and 2)
- 7 $\frac{3}{4}$ " thread for connection of the compressed air
- 8 Adjusting screw - switching speed switch-on operation
- 9 Adjusting screw - switching speed switch-off operation

10 Position switch, terminal box

Type of protection

Instrument protection through intrinsic safety "ia"

Operating data and safety instructions

- The following connection data applies for each of the two intrinsically safe proximity switches (terminals 1 - 2 and terminals 3 - 4)
 - Circuit Ex ia: Type 2
 - $U_i = 16\text{ V}$
 - $I_i = 25\text{ mA}$
 - $P_i = 64\text{ mW}$
 - $C_i = 70\text{ nF}$
 - $L_i = 150\text{ }\mu\text{H}$
 - The intrinsically circuit is galvanically separated from ground
- The regulations for connection of intrinsically safe circuits according to IEC/EN 60079-14 (proof of intrinsic safety) must be observed
- If the proximity switches are connected with certified intrinsically safe circuits of category ib, then the ignition protection type of the signal circuits changes to Ex ib
- Wiring of the intrinsically safe circuits according to IEC/EN 60079-14 and according to the valid national regulations and guidelines

- Use connection cable suitable for long-term operating temperatures $\geq 85\text{ }^{\circ}\text{C}$. Wire cross-section $> 0.1\text{ mm}^2$
- The terminal blocks, insulation plates and fastening clamps must not be removed
- Do not install any additional components in the terminal box
- To maintain the protection rating IP65/IP67, the cover of the terminal box and the cable glands must be mounted correctly

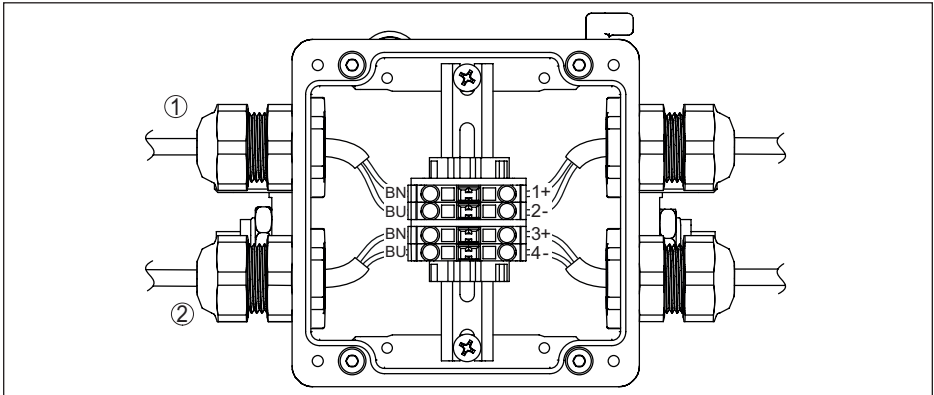


Fig. 3: Connection terminal housing of the ON/OFF position switch

- 1 ON/OFF position switch for switch position "ON" (terminals 1 and 2)
- 2 ON/OFF position switch for switch position "OFF" (terminals 3 and 4)

11 Mechanical data

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

Mechanical data	
Protection (IEC/EN 60529)	IP66 Terminal box: IP65/IP67
Ground terminal (connection cross-section)	$\geq 4\text{ mm}^2$

12 Thermal data

The following temperature tables are valid for all housing and electronics versions.

The relationship between the permissible ambient temperature for the VEGASOURCE 81, 82, 83 depending on the area of application and the maximum surface temperatures, temperature classes, can be seen in the following tables.

VEGASOURCE 8* with pneumatic actuator, optional position switch

Category 2G instrument (EPL Gb instrument)

Temperature class	Ambient temperature	Ambient temperature
	Drive: pneumatic	Pneumatics + position switch
T6	-20 ... +80 °C	-20 ... +69 °C
T5, T4, T3, T2, T1	-20 ... +80 °C	-20 ... +80 °C

Category 2D instrument (EPL Db instrument)

The max. surface temperature is limited by +85 °C.

The permissible ambient temperature is -20 ... +85 °C.

The application conditions during operation without explosion-endangered atmosphere are mentioned in the respective manufacturer instructions, e.g. operating instructions manuals.

VEGASOURCE 8* without pneumatic actuator

Category 1G instrument (EPL Ga instrument)

Temperature class	Ambient temperature Drive: manual + position switch
T6	-50 ... +69 °C
T5	-50 ... +84 °C
T4, T3, T2, T1	-50 ... +95 °C

Category 1D instrument (EPL Da instrument)

The max. surface temperature is limited by +95 °C.

The permissible ambient temperature is -50 ... +95 °C.

The application conditions during operation without explosion-endangered atmosphere are mentioned in the respective manufacturer instructions, e.g. operating instructions manuals.

Printing date:

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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

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