

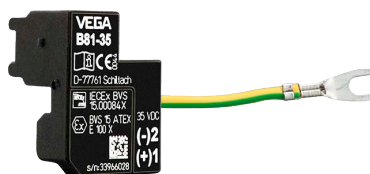


# Safety instructions

## Overvoltage protection

### B81-35

Intrinsic safety



CE 0044



Document ID: 50999



# VEGA

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Supplementary documentation:

- Operating instructions overvoltage arrester
- EU-type approval certificate BVS 15 ATEX E 100 X (Document ID: 51000)

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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 käyttöä varten
EL	Υποδείξεις ασφαλείας για τη χρησιμοποίηση σε περιοχές που υπάρχει κίνδυνος έκρηξης

DE	Die vorliegenden Sicherheitshinweise sind im Download unter <a href="http://www.vega.com">www.vega.com</a> 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 <a href="http://www.vega.com">www.vega.com</a> 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 <a href="http://www.vega.com">www.vega.com</a> en standard en allemand, en anglais, en français et en espagnol. VEGA met à disposition d'autres langues de l'Union Européenne selon les exigences.
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## 1 Area of applicability

These safety instructions apply to the overvoltage arresters B81-35 according to the EC type approval certificate BVS 15 ATEX E 100 X (certification number on the type label).

## 2 General information

The instrument of the overvoltage arrester B81-35 is suitable as overvoltage protection of intrinsically safe circuits with

- the protective level Ex ia [ia Ga] of instrument category 2(1)G
- the protective level Ex ia [ia Da] of instrument category 2(1)D
- the protective level Ex ib of instrument category 2G or 2D
- the protective level Ex ic of instrument category 3G or 3D

The overvoltage arresters B81-35 on the basis of a gas discharge tube are suitable for installation in certified intrinsically safe VEGA instruments, with separating wall 1/2G or 1/2D.

The overvoltage arresters B81-35 for protection of intrinsically safe circuits with protective level Ex "i" of category 2(1)G, 2G, 3G, 2(1)D, 2D, 3D take over the task of limiting transient overvoltages, as necessary overvoltage protection systems acc. to EN 60079-25 or EN 60079-14.

When mounted, the overvoltage arresters B81-35 are suitable as intrinsically, electrical instrument for use in hazardous areas of all combustible substances of explosion group IIA, IIB and IIC, for applications requiring category 1/2G, 2G or 3G instruments. The atmospheres can be also combustible gases, fog or vapours.

When mounted, the overvoltage arresters B81-35 are suitable as intrinsically, electrical instrument for use in hazardous areas of all combustible dusts of explosion group IIIA, IIIB and IIIC, for applications requiring category 1/2D, 2D or 3D instruments.

The overvoltage arresters B81-35 are suitable for protection of certified intrinsically safe VEGA instruments in two-wire version with the following signal transmission:

- Analogue version
  - 4 ... 20 mA current output
  - 4 ... 20 mA current output with superimposed HART protocol
- Digital version
  - Profibus PA
  - Foundation Fieldbus
  - Modbus and Levelmaster protocol

If the overvoltage arresters B81-35 are used for protection of intrinsically safe signal circuits, then the general installation regulations for explosion protection, EN 60079-14, as well as these safety instructions and the operating instructions manual must be observed.

The installation of explosion-endangered systems must always be carried out by qualified personnel.

### Installation in category 1/2G instrument (EPL Ga/Gb instrument)

The overvoltage arresters B81-35 are suitable for installation in instrument for installation in hazardous areas (Zone 1), requiring an category 2(1)G instruments. The electronics housing is in the area (Zone 1) requiring category 2G instruments. The sensor circuit leads into an area (Zone 0) requiring category 1G instruments.

### Installation in category 2G instrument (EPL Gb instrument)

The overvoltage arresters B81-35 are suitable for installation in hazardous areas requiring a category 2G instrument.

## Installation in category 3G instrument (EPL Gc instrument)

The overvoltage arresters B81-35 are for installation as protection of the electronics of instruments in hazardous areas, requiring a category 3G instrument.

## Installation in category 1/2D instrument (EPL Da/Db instrument)

The overvoltage arresters B81-35 are suitable for installation in instrument for installation in hazardous areas (Zone 21), requiring an category 2(1)D instruments. The electronics housing is in the area (Zone 21) requiring category 2D instruments. The sensor circuit leads into an area (Zone 20) requiring category 1D instruments.

## Installation in category 2D instrument (EPL Db instrument)

The overvoltage arresters B81-35 are suitable for installation in hazardous areas requiring a category 2D instrument.

## Installation in category 3D instrument (EPL Dc instrument)

The overvoltage arresters B81-35 are for installation as protection of the electronics of instruments in hazardous areas, requiring a category 3D instrument.

## Labelling

EN 60079-0, EN 60079-11, EN 60079-25

II 2(1)G Ex ia [ia Ga] IIC T6...T1 Gb

II 2G Ex ib IIC T6...T1 Gb

II 3G Ex ic IIC T6...T1 Gc

II 2(1)D Ex ia [ia Da] IIIC T135°C Db

II 2D Ex ib IIIC T135°C Db

II 3D Ex ic IIIC T135°C Dc

## 3 Technical data

### Overvoltage arrester B81-35

Power supply and signal circuit: (terminals 1[+], 2[-])

Ignition protection type intrinsic safety Ex i IIC, IIIC

- $U_i \leq 40 \text{ V DC}$
- $I_i \leq 131 \text{ mA}$
- $C_i = \text{negligibly small}$
- $L_i = \text{negligibly small}$

or for use in intrinsically safe FISCO fieldbus instruments

- $U_i \leq 17.5 \text{ V DC}$
- $I_i \leq 500 \text{ mA}$
- $P_i \leq 5.5 \text{ W}$
- $C_i = \text{negligibly small}$
- $L_i = \text{negligibly small}$
- DC response voltage 600 V, -20 %/+35 %
- Impulse response voltage 850 V at 100 V/μs, 1100 V at 1000 V/μs

Power supply and signal circuit: (plug connection)

For connection to an intrinsically safe circuit.

- $U_o = U_o$  of the certified, intrinsically safe voltage supply
- $I_o = I_o$  of the certified, intrinsically safe voltage supply
- $P_o = P_o$  of the certified, intrinsically safe voltage supply
- $C_o = C_o$  of the certified, intrinsically safe voltage supply
- $L_o = L_o$  of the certified, intrinsically safe voltage supply

The supply voltage  $U_i$  of the overvoltage arrester B81-35 must not exceed 30 V DC so that the intrinsic safety is still ensured after assembly with a VEGA sensor (VEGAPULS, VEGABAR, VEGAFLEX, VEGADIF 85) or with the VEGA display (VEGADIS 82).

After assembling the measuring system - intrinsically safe supply, overvoltage arrester B81-35, sensor or display - the intrinsic safety must be ensured by carrying out the intrinsic safety proof.

Note: The overvoltage arrester passes on the parameters  $U_o$ ,  $I_o$ ,  $P_o$ ,  $C_o$ ,  $L_o$  of the intrinsically safe power supply 1 : 1 to the sensor or the display.

## 4 Application conditions

### Permissible ambient temperatures depending on temperature class

The overvoltage arrester can only be operated in conjunction with a VEGA sensor or a VEGA display. The permissible ambient temperature (depending on the temperature classes T6 ... T1) of the assembly sensor/display with overvoltage arrester B81-35 is determined by the permissible ambient temperatures of the VEGA sensor or VEGA display (VEGAPULS, VEGABAR, VEGAFLEX, VEGADIF 85, VEGADIS 82).

The permissible ambient temperatures must therefore always be taken from the supplied safety instructions of the respective VEGA sensors or the VEGA display VEGADIS 82.

The same applies to the maximum surface temperatures of VEGA sensors or VEGA display VEGADIS 82 when protected by housing approvals.

## 5 Protection rating

For applications in hazardous areas, overvoltage arrester B81-35 must be mounted in a suitable housing with min. protective level IP20 acc. to EN 60079-11.

For applications in dust-explosive areas, overvoltage arrester B81-35 must be mounted in a suitable housing with min. protective level IP5X acc. to EN 60079-11.

When mounted, the protection is determined by the respective VEGA instrument.

The specifications in the operating and safety instructions of the respective VEGA instrument are applicable.

## 6 Protection against static energy

When installed, the instructions for the corresponding VEGA instrument must be taken from the manufacturer specifications, e.g. operating instructions.

## 7 Installation/construction

The overvoltage arresters B81-35, as far as required, must be only used in the VEGA housing with respective mechanical connection on the terminals of the signal and supply circuit.

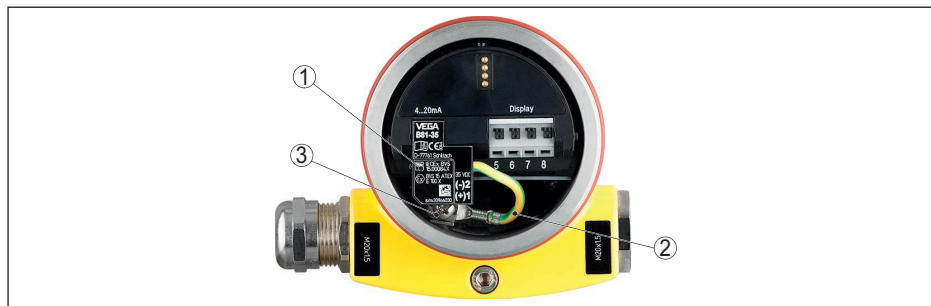
When connecting an intrinsically safe instrument to a non-intrinsically safe circuit, the instrument must be no longer used in intrinsically safe circuits.

## 8 Grounding

To ensure the function of the overvoltage arrester, it is absolutely necessary to connect the overvoltage arrester B81-35 with the local potential equalization.

For this purpose, the green-yellow protective ground cable must be connected via the cable lug to the ground cable inside the VEGA housing. The cable lug must be secured by means of screw connection and retaining ring.

The outer ground terminal of the VEGA instrument must be connected acc. to EN 60079-14 chapter 16.3 (edition 2014) to the local potential equalization.



- 1 Overvoltage arresters
- 2 Green-yellow protective ground cable with cable lug
- 3 Internal ground terminal

## 9 Isolation voltage against earth, test of the dielectric strength

The intrinsically safe input/output circuit is ground-free. The breakdown voltage of the overvoltage arrester B81-35 between intrinsically safe circuit and ground terminal is less than 500 V AC due to construction reasons.

With a metrological test of the absence of ground of intrinsically safe circuits against ground acc. to EN 60079-25, the overvoltage arrester must be removed.

Printing date:

# VEGA

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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