Safety instructions
VEGAMIP T61, R61

Flameproof enclosures

Document ID: 41795

Contents

Supplementary documentation:

- Operating instructions VEGAMIP T61, R61
- Certificate of Conformity IECEx BVS 11.0098, Issue No.: 1 (Document ID: 41796)

Editing status: 2017-07-19

41795-EN-180503

1 Area of applicability

These safety instructions apply to the VEGAMIP T61, R61 of type series:

- VEGAMIP MPT61(*).DX****T***
- VEGAMIP MPT61(*).DK****T***
- VEGAMIP MPR61(*).DX****R/T***
- VEGAMIP MPR61(*).DK****R/T***

according to Certificate of Conformity IECEx BVS 11.0098, Issue No.: 1 (certificate number on the type label) and for all instruments with safety instruction 41795.

The classification as well as the respective standards are stated in the Certificate of Conformity:

- IEC 60079-0: 2012
- IEC 60079-1: 2014
- IEC 60079-26: 2015
- Ex db IIC T6 … T1 Ga/Gb
- Ex db IIC T6 … T1 Gb

The above mentioned versions have different approval areas and probably further approvals to ignition protection type "Flameproof enclosures Ex db".

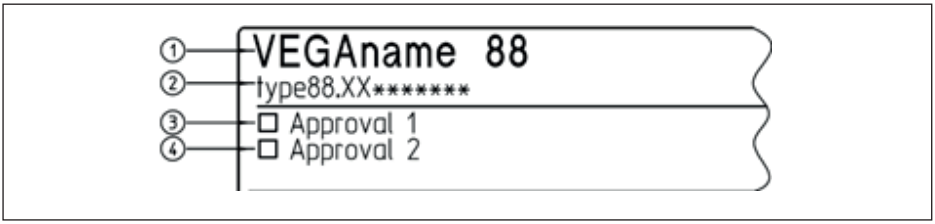
	Approval area	**Combination**		
VEGAMIP MP*6*.	**IEC**	**Ex db**	**+ Ex ia**	**+ Ex t**
DX	x	x		
DK	x	x		x

The ignition protection type "Protection by enclosure Ex-t", the certification for different regions and special use (e.g. ships) are **not** subject of the assessment and evaluation acc. to the Certificate of Conformity IECEx BVS 11.0098, Issue No.: 1.

In the following, all above mentioned versions are called VEGAMIP T61, R61. If parts of these safety instructions refer only to certain versions, then these will be mentioned explicitly with their type code.

2 Different ignition protection types

The VEGAMIP T61, R61 in the version VEGAMIP MP*61(*).DK****R/T*** can be either used in hazardous dust atmospheres or in hazardous gas atmospheres. The operator must specify the selected ignition protection type before installation. The selected ignition protection type must be marked by scratching off on the identification mark of the type label.



1 VEGAMIP T61, R61
2 Instrument version
3 Identificatiion label: Approval in dust ignition protection type e. g. „Ex t“
4 Identificatiion label: Approval in Gas ignition protection type e. g. „Ex i“, „Ex d“

If VEGAMIP T61, R61 is installed in a dust atmosphere, then the safety instructions and the instructions in the respective certificates must be noted:

Installation	Approval	Certificate	Safety instruction
Dust	"GX"	IECEx BVS 09.0054	41637

3 Important specification in the type code

VEGAMIP MP*61(*).abcdefghij

Position		Feature	Description
ab	Approval	DX	IEC Ex db IIIC T1…T6 Ga/Gb, Gb
		DK	IEC Ex db IIC T1…T6 Ga/Gb, Gb, Ex ta, ta/tb, ta/tc, tb IIIC T.. Da, Da/Db, Da/Dc, Db IP66
c	Version / Material	A	Inside horn antenna (ø 1½") / 316L with PTFE cover
de	Process fitting / Material	**	Gas-tight threaded connections, pipe connections and industrial flanges acc. to ASME, BS, DIN, EN, GOST, HG/T, JIS, other international, national or industrial standards, regulations or standards, with pressure specifications
f	Seal / Process temperature	*	O-Ring-Dichtungen aus FKM, EPDM, FFKM, PP, PTFE oder anderen Dichtungsmaterialien/-temperaturen
g	Electronics	R	Relay (DPDT) 20 … 72 V DC/20 … 253 V AC (3 A) (only for MPR61)
		T	Transistor (NPN/PNP) 20 … 55 V DC
f	Housing / Protection	A	Aluminium single chamber / IP 66/IP 68 (0.2 bar)
		V	Stainless steel single chamber (precision casting) / IP 66/IP 68 (0.2 bar)
		H	Special colour Aluminium / IP 66/IP 68 (0.2 bar)
i	Cable entry / Cable gland	*	M20 x 1.5 and ½ NPT thread for use of cable entries and closing screws (except plug connections) approved acc. to ignition type protection.
j	Additional equipment	X	without

4 General information

The VEGAMIP T61, R61 are used for level detection of liquids and bulk solids.

The VEGAMIP T61, R61 consist of an electronics housing, the process fittings and a sensor or an antenna.

The VEGAMIP T61, R61 are suitable for use in hazardous atmospheres of all combustible substances of explosion group IIA, IIB and IIC. The VEGAMIP T61, R61 are suitable for applications requiring category 1/2G (EPL Ga/Gb) and 2G (EPL Gb) instruments.

5 Application area

EPL Ga/Gb instrument
The VEGAMIP T61, R61 with mechanical fixing element are installed in hazardous areas of zone 1 requiring EPL Gb instruments. The mechanical fixing element, process connection element is installed in the separating wall, which separates areas requiring EPL Gb or EPL Ga instruments. The sensor measuring system is installed in hazardous areas of zone 0 requiring EPL Ga instruments.

EPL Gb instrument
The VEGAMIP T61, R61 with the mechanical fixing element are installed in hazardous areas of zone 1 requiring EPL Gb instruments.

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VEGA Instrument	EPL Gc	EPL Gb	EPL Ga/Gb
Ex Zone 2 			
Ex Zone 1 			
Ex Zone 0 			

6 Special operating conditions

The following overview lists all special features of VEGAMIP T61, R61.

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

Impact and friction sparks
The VEGAMIP T61, R61 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 capacitance of the metal measurement loop label was measured with 15 pF.

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:

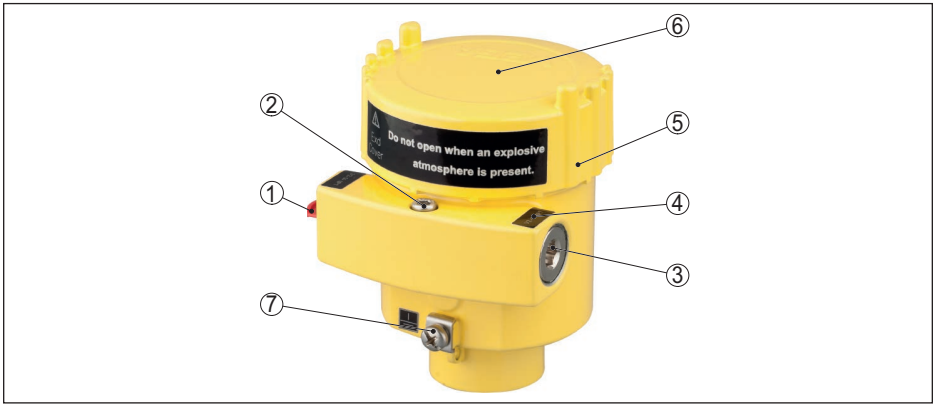
- The staff must be qualified according the respective tasks
- The staff must be trained in explosion protection
- The staff must be familiar with the respectively valid regulations, e.g. planning and installation acc. to IEC/EN 60079-14
- Make sure when working on the instrument (mounting, installation, 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 Certificate of Conformity and the valid regulations and standards
- Modifications on the instrument can influence the explosion protection and hence the safety
- Modifications must only be carried out by employees authorized by VEGA company

Cable and wire entries

- The red thread or/dust covers screwed in when the instruments are shipped (depending on the version) must be removed before setup and replaced by cable entries or closing screws suitable for the respective ignition protection type and IP protection.

- Note type and size of the thread: A label with the respective thread name is in the area of the respective thread
- Threads must have no damages
- Cable entries and closing screws should be mounted correctly and according to the safety instructions of the manufacturer to ensure the specified ignition protection type and IP protection rating. When using certified or suitable cable glands, closing screws or plug connections, it is absolutely necessary to note the corresponding certificates/documents. Supplied cable entries or closing screws meet these requirements.
- Unused openings must be closed with plugs suitable for the ignition protection type and IP protection. Supplied plugs meet these requirements.
- Cable or wire entries resp. the closing screws must be tightly screwed into the housing
- The connection cables resp. pipeline sealing facilities must be suitable for the application conditions (e.g. temperature range) of the application
- With surface temperatures > 70 °C, the cables must be suitable for the higher application conditions
- The connection cable of VEGAMIP T61, R61 has to be wired fix and in such a way that damages can be excluded.

Aluminium/Stainless steel "Ex-d" housing



1 "Ex-d" connection compartment with electronics module
2 Type of thread
3 Red threaded or dust protection cap
4 External ground terminal
5 Blind plug, part of the "Ex-d" housing
6 Locking screw of the lid
7 Inspection window of glass

Mounting

Keep in mind for instrument mounting

- Mechanical damage on the instrument must be avoided
- Mechanical friction must be avoided
- Vessel installations and probable flow must be taken into account
- Process connections separating two areas of different Ex-zones must comply to valid regulations and standards and the protection rating must be in conformity to IEC/EN 60529.
- Close the housing lid (s) up to the stop before starting operating, to ensure the IP protection rating specified on the type label

- Protect the lid against unauthorized opening by unscrewing the locking screw up to the stop. With double chamber housing, you have to protect both lids.
- 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

Flameproof enclosures

- The terminals for connecting the operating voltage or signal circuits are integrated in the terminal compartment with ignition protection type "Flameproof enclosure db".
- The thread gaps between housing and cover as well as between threaded fitting and container are flameproof joints
- It is not allowed to repair the flameproof joints.
- Cable, wire entries and closing screws must be certified acc. to ignition protection type "Flameproof exclosures Ex-db". Cable, wire entries and closing screws of simple design must not be used.
- Separately certified cable and wire entries can determine the permissible ambient temperature range or the temperature classes
- For connection to a "Conduit" system the corresponding sealing facility must be attached directly to the "Ex-d" connection compartment
- Unused openings must be sealed according to ignition protection type "Flameproof enclosures Ex-db"
- Only one threaded adapter is allowed per thread, when using a closing screw, threaded adapters are not allowed
- The screwed in closing screw is certified as part of the "Ex-d" housing

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
- The potential equalization terminal must be secured against loosening
- Correct and clearly marked cable connections

The parts of the VEGAMIP T61, R61 being in contact with flammable media during operation must be included in the periodic overpressure test of the plant.

8 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
- Note the relation between process temperature on the sensor/antenna and the permissible ambient temperature on the electronics housing. For permissible temperatures, see the respective temperature tables. See chapter "*Thermal data*".
- If necessary, a suitable overvoltage arrester can be connected in front of the VEGAMIP T61, R61
- When used in hybrid mixtures (gas and dust at the same time) additional measures for explosion protection must be taken
- Lids must not be opened if there is a hazardous atmosphere. The housing lids are marked with the warning label:

WARNING- DO NOT OPEN WHEN AN EXPLOSIVE ATMOSPHERE IS PRESENT

- 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.

9 Potential equalization/Grounding

- Integrate the instruments into the local potential equalisation, e.g. via the internal or external earth terminal
- 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

10 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
- Plastic housing, plastic housing parts
- Metal housing with inspection window
- Plastic process fittings
- Plastic-coated process fittings and/or plastic-coated sensors
- Connection cable for separate versions
- Type label
- Isolated metallic labels (measurement loop identification label)

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

11 Electrical data

VEGAMIP MPT61(*).DX/DK****T***	U = 20 … 253 V AC, 50/60 Hz or U = 20 … 72 V DC
Voltage supply: (terminals 1, 2)	
Power consumption	1.8 VA (AC), approx. 1.3 W (DC)
Load current	

VEGAMIP MPR61(*).DX/DK****R***	U = 20 … 253 V AC, 50/60 Hz
Voltage supply: (terminals 1, 2)	U = 20 … 72 V DC
Power consumption	1.8 VA (AC), approx. 1.3 W (DC)
Relay circuit:	
Terminals 3, 4, 5	253 V AC, 5 A
Terminals 6, 7, 8	4 A, 30 V DC
	0.2 A, 125 V DC
VEGAMIP MPR61(*).DX/DK****T***	U = 20 … 55 V DC
Voltage supply: (terminals 1, 2)	max. 1 W
Power consumption	
Transistor output:	U_{Load} = 20 … 55 V DC
Terminals 4, 5	I_{Load} ≤ 400 mA AC
Emitting/Receiver frequency	
Radiation power (normal operation)	P_{EIRP} = 0.1 DC
Radiation power (2-error analysis)	P_{EIRP} = 2.7 DC

12 Thermal data

The max. permissible ambient temperatures depending on the temperature classes are specified in the following tables.

EPL Ga/Gb instrument

Temperature class	Permissible ambient temperature on the sensor	Permissible ambient temperature on the electronics
T6, T5, T4, T3, T2, T1	-20 … +60 °C	-50 … +60 °C

For applications requiring instruments of EPL Ga the process pressure of the media must be between 0.8 … 1.1 bar. If the VEGAMIP T61, R61 are operated at temperatures higher than those specified in the above table, please make sure through appropriate measures that there is no danger of ignition from the hot surfaces. The max. permissible temperature on the electronics/housing should not exceed the values specified in the above table. The application conditions during operation in areas with no explosive mixtures are stated in the manufacturer information.

EPL Gb instrument

Temperature class	Permissible ambient temperature on the sensor	Permissible ambient temperature on the electronics
T6, T5, T4, T3, T2, T1	-40 … +80 °C	-50 … +60 °C

If the VEGAMIP T61, R61 are operated at temperatures higher than those specified in the above table, please make sure through appropriate measures that there is no danger of ignition from the hot surfaces. The maximum temperature on the electronics/housing should not exceed the values specified in the above table. The permissible operating temperatures and pressures are stated in the manufacturer information.

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

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41795-EN-180503

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