

# Safety instructions

## PLICSMOBILE PMT81

Flameproof enclosures

Intrinsic safety

IECEX BVS 17.0098



Document ID: 55624



# VEGA

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Supplementary documentation:

- Operating Instructions PLICSMOBILE T81
- Certificate of Conformity IECEx BVS 17.0098, Issue No. 0 (Document ID: 55627)

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## 1 Area of applicability

These safety instructions apply to PLICSMOBILE PMT81 according to the Certificate of Conformity IECEx BVS 17.0098, Issue No. 0 (certificate number on the type label) and to all instruments with the number of the safety instruction (55624) on the type label.

## 2 General information

The PLICSMOBILE PMT81 is an external GSM/GPRS/UMTS radio unit for transmission of measured values and for remote parameter adjustment of plics® sensors.

In conjunction with all two-wire HART electronics there is the option of transmitting measured values and diagnostic information. Measured values and messages can be optionally sent via e-mail or SMS.

The transmission is either time, measured value or status-controlled. There is also the possibility to access the connected VEGA instrument via remote parameter adjustment. When used in explosive atmosphere, up to five sensors can be connected at the same time to PLICSMOBILE PMT81.

The PLICSMOBILE PMT81.\*I\*\*\*\*\* consists of a double chamber Ex-db-ia electronics housing with integrated electronics module and an external antenna.

The intrinsically safe connection chamber is used as connection compartment for the supply and signal circuits of up to five external VEGA sensors with two-wire HART electronics.

The PLICSMOBILE PMT81.\*I\*\*\*\*\* are suitable for applications in hazardous atmospheres of all combustible materials of explosion group IIA, IIB and IIC, for applications requiring instruments with protective level Gb.

The supply and signal circuits for connection of up to five VEGA sensors with two-wire HART electronics are suitable for intrinsically safe instrument for applications in hazardous atmosphere of all combustible materials of explosion group IIA, IIB, IIC, IIIA, IIIB and IIIC for applications requiring instruments with protective level EPL Ga, EPL Ga/Gb, EPL Gb, EPL Da, EPL Da/Db, EPL Da/Dc or EPL Db.

When the instruments are installed and operated in hazardous areas, the following must be taken into account:

- For mounting, electrical installation, setup and maintenance of the operating instrument, the staff must be:
  - qualified according the respective tasks
  - trained in explosion protection
  - familiar with the respectively valid regulations, e.g. planning and installation acc. to IEC/ EN 60079-14
- The instrument has to be mounted according to the manufacturer specifications and the valid regulations and standards
- Modifications on the instruments can influence the explosion protection and hence the safety. Modifications must only be carried by staff authorized by VEGA

### EPL Gb instrument

The PLICSMOBILE PMT81 are installed in hazardous areas requiring an instrument with protective level Gb.

### Ignition protection label:

Ex db ia [ia Ga] IIC T6 Gb

Ex db ia [ia IIIC Da] IIC T6 Gb

## Important specification in the type code

### PLICSMOBILE PMT81(\*)(\*).ab\*\*\*fg\*\*\*

Position		Feature	Description
a	Scope	I	IECEX / world-wide
b	Approval	C	IEC [Ex ia Ga] IIC, [Ex ia Da] IIIC, [Ex ia Ma] I
		I	Ex db ia [ia Ga] IIC T6 Gb Ex db ia [ia IIIC Da] IIC T6 Gb Ex ia tb [ia Da] IIIC T70°C Db Ex ia tb [ia IIC Ga] IIIC T70°C Db
f	Housing	D	Aluminium - double chamber
		W	Stainless steel double chamber housing (precision casting)
		R	Plastic double chamber housing (only in conjunction with approval "C")
g	Housing version / Protection	I	compact / IP 66

## 3 Technical data

### Electrical data

Supply voltage: (terminals 1[+], 2[-] in the connection compartment)  $U = 9.6 \dots 32 \text{ V DC}$   
 $U_m = 32 \text{ V DC}$

Intrinsically safe circuit: signal and supply In ignition protection type intrinsic safety [Ex ia Ga] IIC, circuit I: (terminals 1[VSens-], 2[VSens+]) [Ex ia Da] IIIC, [Ex ia Ga] IIIB, [Ex ia Da] IIIB

Max. values of the intrinsically safe signal current circuit:

$$U_o = 29.75 \text{ V}$$

$$I_o = 95 \text{ mA}$$

$$P_o = 707 \text{ mW}$$

Characteristics: linear

The effective internal inductance  $L_i$  and capacity  $C_i$  are negligibly small.

The permissible values for the external capacitances  $C_o$  and inductances  $L_o$  which result from the combination of  $C_o$  and  $L_o$ , can be found in the following table.

### For gas group II:

		Ex ia IIB	
		0.1 mH	10 mH
Max. permissible external inductance $L_o$	0.02 mH	0.1 mH	10 mH
Max. permissible external capacitance $C_o$	68 nF	569 nF	200 nF

When using the supplied VEGA connection cable for power supply of the external sensors, the  $C_i' = 200 \text{ pF/m}$  and also  $L_i' = 1.00 \text{ } \mu\text{H/m}$  specified in EN/IEC 60079-14 must be taken into account.

The metallic parts of PLICSMOBILE PMT81 are electrically connected with the internal and external earth terminal.

## 4 Application conditions

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

### When used in Ex atmospheres requiring instruments with protective level Gb (zone 1)

Temperature class	Permissible ambient temperature on the housing
T6 ... T1	-20 ... +50 °C

When 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 with no explosive mixtures present are stated in the manufacturer information.

## 5 Protection against static electricity

The PLICSMOBILE PMT81 in versions with electrostatically chargeable plastic parts, such as e.g. plastic housing or plastic antenna, have a caution label pointing out the safety measures that must be taken with regard to electrostatic charges during operation.

WARNING- POTENTIAL ELECTROSTATIC  
CHARGING HAZARD - SEE INSTRUCTIONS

Caution: Plastic parts! Danger of electrostatic charging!

- Avoid friction
- No dry cleaning
- Construction/Installation: The PLICSMOBILE PMT81 must be constructed/installed in such a way that
  - electrostatic charges are ruled out during operation, maintenance and cleaning.
  - process-related electrostatic charges, e.g. by measuring media flowing past, are ruled out

## 6 Impact and friction sparks

The PLICSMOBILE PMT81 must be mounted in such a way that sparks from impact and friction between aluminium and steel (except stainless steel, if the presence of rust particles can be excluded) cannot occur.

## 7 Use of an overvoltage arrester

If necessary, a suitable overvoltage arrester can be connected in front of the PLICSMOBILE PMT81.

## 8 Type and size of the threads for the cable entries

With PLICSMOBILE PMT81 there is an M16 x 1.5 thread in the first chamber or alternatively a  $\frac{3}{8}$  -18 NPT thread in which a M12 plug connector for connection of the external VEGA sensors is mounted.

Depending on the selected feature under "Cable entry/Connection" in the type code of PLICSMOBILE PMT81, the housing openings in delivery status have to be closed with a suitable cable gland, sealing plug or red threaded/dust protection cap.

The feature "1/Q" in the type key, see above, is then replaced by the respective feature of the connection possibility.

There is an information plate bearing the thread designation on the housing next to all threads.

## 9 Type of protection flameproof enclosure Ex "d"

The terminals for connecting to the operating voltage, i.e. signal circuits, are integrated in a compartment according to type of protection flameproof enclosure "d".

The thread gaps between housing and cover as well as between threaded fitting and container are flameproof joints.

The flameproof joints are not intended to be repaired.

The joint surfaces are not coated with paint or are not powder coated.

The "Ex-d" connection compartment is provided with a M20 x 1.5 or ½-14 NPT thread for connection to a certified "Conduit" system or for mounting a "Ex-d" cable entry certified according to IEC 60079-1. Cable entries of simple construction may not be used. Please take note of section 13.1 and 13.2 of IEC 60079-1. When connecting to a "Conduit" system, the associated sealing facility must be located directly on the "Ex-d" connection compartment.

A certified "Ex-d" cable gland can optionally be supplied with the delivery. It is suitable for insertion of armoured or unarmoured cables depending on the ordered version. The instructions in the document accompanying the respective cable entry must be observed. The "Ex-d" cable entry must be screwed tightly into the housing. The supplied cable entry is suitable for the housing temperature range mentioned in the PLICSMOBILE PMT81 specification. If a different cable entry is used (suitable Ex d certified cable glands and blind plugs should be used), the separately certified cable entry (e.g. cable gland or cover elements) or the temperature classes on the electronics determines the maximum permissible ambient temperature range -20 ... +60 °C on the housing.

The factory-installed screw plug or blind plug (depending on the type ordered) is part of the "Ex-d" housing. If a screw plug type other than the factory-installed screw plug or the one with article number 2.30690 is used, it must be suitable for the function and certified according to IEC 60079-1.

Before opening the lid of a "Ex-d" compartment or in case it is already open (e. g. during connection or service work), make sure that either the supply cable is completely voltage free or no explosive atmosphere is present.

When wiring the connection line to the "Ex-d" connection compartment, it must be sufficiently secured against damage and in conformity with IEC 60079-14.

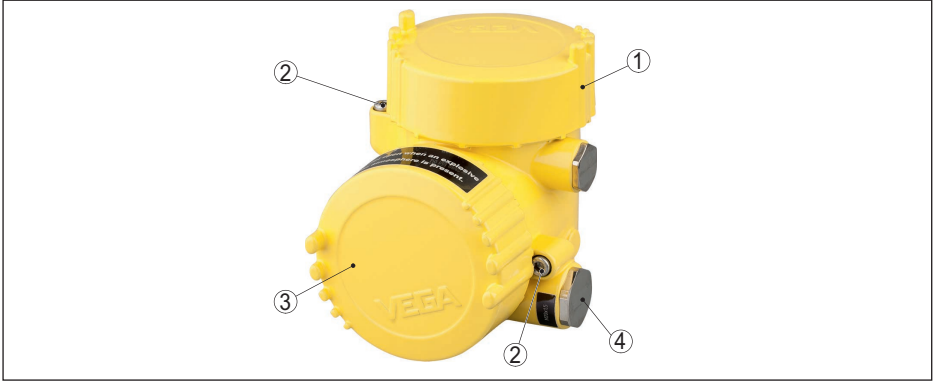
The connection cables, the cable entries and the closing screws or the pipeline sealing facilities must be suitable for the lowest ambient temperature.

The cover of the "Ex-d" connection compartment must be screwed in completely before commissioning and secured by screwing out the lid locking screw all the way to the stop.

Unused openings must be sealed according to IEC 60079-1 paragraph 11.9.

The cover of the "Ex-d" connection compartment is provided with the warning label "Do not open when an explosive gas atmosphere is present".

## Double chamber housing with "Ex-d" connection compartment



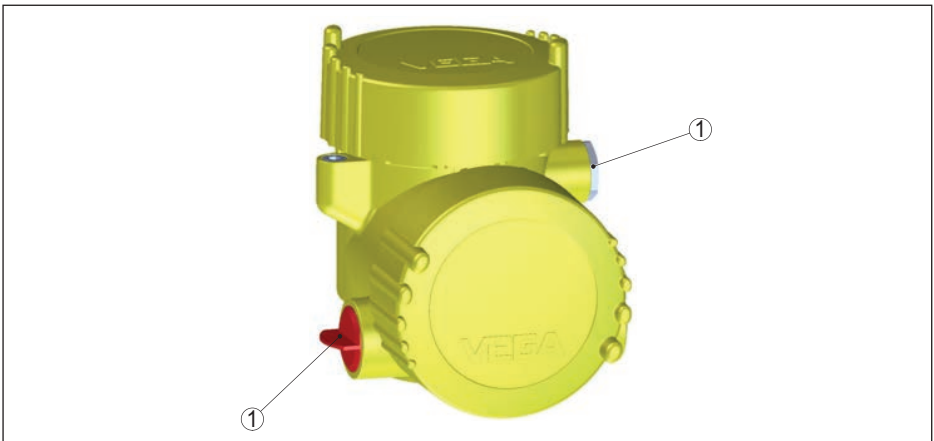
- 1 "Ex-i" connection compartment
- 2 Locking screw of the lid
- 3 "Ex d" connection compartment with integrated barrier
- 4 Screw plug

The cover of the "Ex-d" connection compartment with the caution label "Do not open when an explosive gas atmosphere is present" and the cover of the "Ex-i" connection compartment without caution label must not be exchanged. The covers must be mounted on the corresponding connection compartments.

## 10 Removing and replacing the red threaded/dust cover

The red thread or/dust covers screwed in when the instrument is shipped (depending on the version) must be removed before setup. The openings must be closed before setup by a way approved for the ignition protection type. Approved and suitable cable glands or blind plugs must be installed according to the supplied documents.

Before setting up PLICSMOBILE PMT81 you have to check if all other openings are closed in a way approved for the ignition protection type.

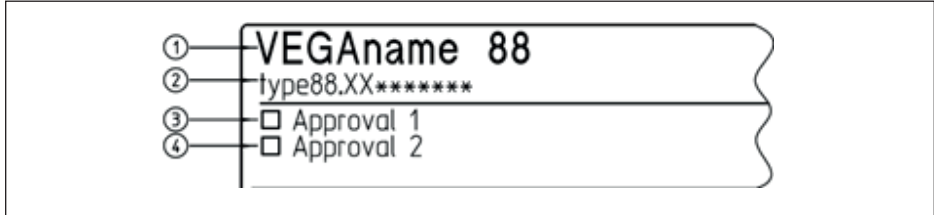


- 1 Red thread or dust cover must be removed before setup. The opening must be closed before setup by a way approved for the ignition protection type.

## 11 Sensors with several ignition protection types

The PLICSMOBILE PMT81 meet either the requirements of ignition protection type Ex-d as well as Ex-t. The operator must specify during installation according to which ignition protection type the installation is executed.

The selected ignition protection type must be marked by scratching off on the identification mark of the type label.



- 1 PLICSMOBILE PMT81
- 2 Instrument version
- 3 Identification label: Approval in dust ignition protection type e. g. „Ex t“
- 4 Identification label: Approval in Gas ignition protection type e. g. „Ex i“, „Ex d“

VEGA delivers with sensors having several flame proofings the safety instructions of all flame proofings the sensor is approved for.

Take note of the supplied safety instructions of the selected ignition protection type.









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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