

# Safety instructions

## PLICSMOBILE PMT81

Protection by enclosure

Intrinsic safety

IECEX BVS 17.0098



Document ID: 55626



# VEGA

## Contents

1	Area of applicability.....	3
2	General information.....	3
3	Technical data .....	5
4	Application conditions .....	5
5	Impact and friction sparks .....	5
6	Use of an overvoltage arrester .....	5
7	Type and size of the threads for the cable entries.....	5
8	Removing and replacing the red threaded/dust cover .....	6
9	Safe operating mode .....	6
10	Potential equalisation.....	6
11	Sensors with several ignition protection types .....	7
12	Electrostatic charging (ESD).....	7

Supplementary documentation:

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

Editing status: 2017-12-20

## 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 (55626) 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-ia-tb electronics housing with integrated electronics module and an external antenna.

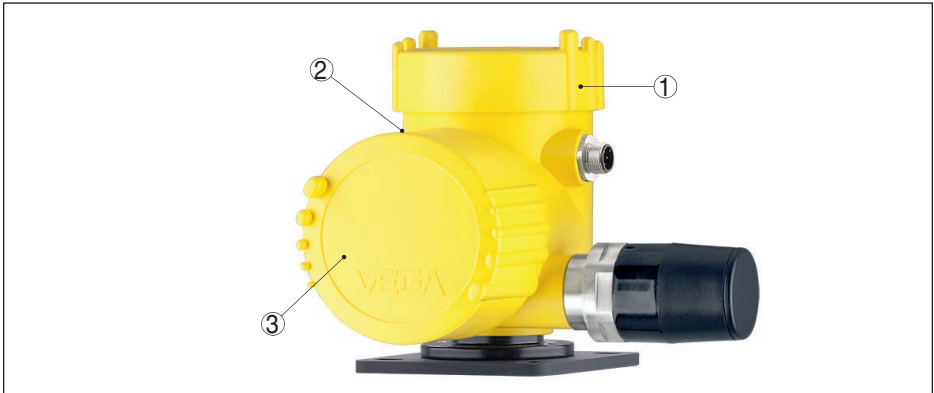
The intrinsically safe connection chamber is used as connection compartment for the supply and signal circuits of up to five external VEGA sensors with two-wire HART electronics.

The PLICSMOBILE PMT81.\*I\*\*\*\*\* are suitable for applications in hazardous atmospheres of combustible dusts, for applications requiring instruments with protective level Db or Dc.

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
- 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
- Before operation tighten the housing lid/s up to the stop to ensure the IP protection rating specified on the type label. Lock the lid with the respective locking screw against unauthorized opening. On the double chamber housing, you have to lock both lids.



- 1 "Ex-i" connection compartment
- 2 Locking screw of the lid
- 3 "Ex-tb" electronics compartment

**EPL Db instrument**

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

**Ignition protection label:**

Ex ia tb [ja Da] IIIC T70°C Db

Ex ia tb [ja IIC Ga] IIIC T70°C Db

**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 [ja Ga] IIC T6 Gb Ex db ia [ja IIIC Da] IIC T6 Gb Ex ia tb [ja Da] IIIC T70°C Db Ex ia tb [ja 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 IIC	Ex ia IIB	
Max. permissible external inductance $L_o$	0.05 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 maximum surface temperature is mentioned in the following table.

#### When used in Ex atmospheres requiring instruments with protective level Db (zone 21)

Max. surface temperature on the housing	+70 °C
---	--------

## 5 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.

## 6 Use of an overvoltage arrester

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

## 7 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.

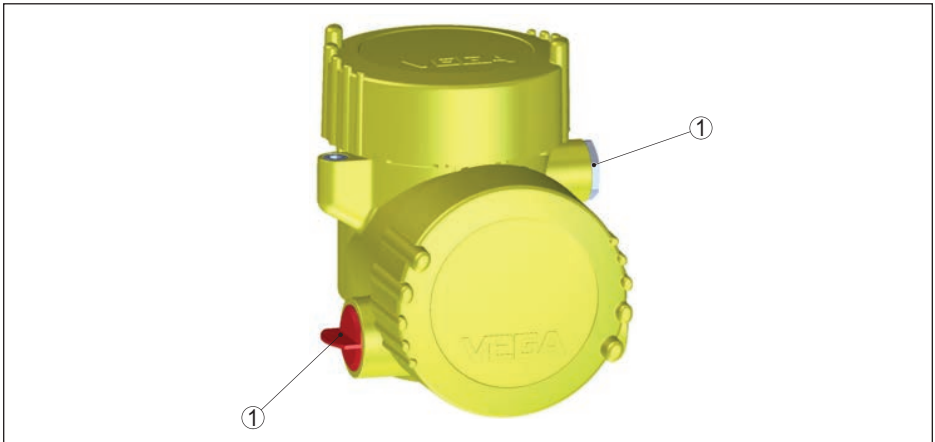
The feature "1/Q" in the type key, see above, is then replaced by the respective feature of the connection possibility.

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

## 8 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.

## 9 Safe operating mode

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

The supplied cable entries and closing screws are suitable for the specified housing temperature range. If other cable entries and closing screws are used, they will probably specify the permissible ambient temperature on the housing.

## 10 Potential equalisation

The PLICSMOBILE PMT81 must be grounded. The internal or external ground terminal must be used for this purpose.

The lids of the double chamber must be screwed in completely before commissioning. The lids are secured by screwing out the lid locking screw all the way to the stop. Lids must not be opened when an explosive dust atmosphere is present.

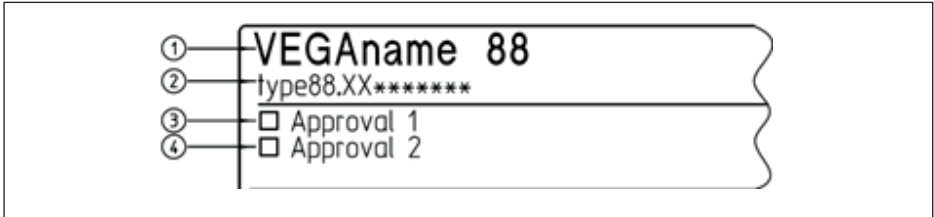
The housing lids are marked with a warning label.

WARNING - DO NOT OPEN WHEN AN  
EXPLOSIVE ATMOSPHERE IS PRESENT

## 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.

## 12 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
- 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 (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:

- in the case of extremely flammable dusts with a minimum ignition energy (MIE) of less than 3 mJ, the device must not be used in areas where intensive electrostatic charging processes can be expected

- 
- 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





55626-EN-190108





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

© VEGA Grieshaber KG, Schiltach/Germany 2019



55626-EN-190108

VEGA Grieshaber KG  
Am Hohenstein 113  
77761 Schiltach  
Germany

Phone +49 7836 50-0  
Fax +49 7836 50-201  
E-mail: [info.de@vega.com](mailto:info.de@vega.com)  
[www.vega.com](http://www.vega.com)