

Translation

EU-Type Examination Certificate

Equipment intended for use in potentially explosive atmospheres
Directive 2014/34/EU

EU-Type Examination Certificate Number: **BVS 19 ATEX E 070 X**

Product: **Pressure transmitter OPTIBAR PM 3050
Differential pressure transmitter OPTIBAR DP 3050**

Manufacturer: **KROHNE Pressure Solutions GmbH**

Address: **Gewerbepark Meißen 14, 32423 Minden, Germany**

This product and any acceptable variations thereto are specified in the appendix to this certificate and the documents referred to therein.

DEKRA Testing and Certification GmbH, Notified Body number 0158, in accordance with Article 17 of Directive 2014/34/EU of the European Parliament and of the Council, dated 26 February 2014, certifies that this product has been found to comply with the Essential Health and Safety Requirements relating to the design and construction of products intended for use in potentially explosive atmospheres given in Annex II to the Directive.

The examination and test results are recorded in the confidential Report No. BVS PP 19.2154 EU.

The Essential Health and Safety Requirements are assured in consideration of:

EN IEC 60079-0:2018	General requirements
EN 60079-11:2012	Intrinsic Safety "i"
IEC 60079-26:2014	Equipment with equipment protection level (EPL) Ga

If the sign "X" is placed after the certificate number, it indicates that the product is subject to the Special Conditions for Use specified in the appendix to this certificate.

This EU-Type Examination Certificate relates only to the design and construction of the specified product. Further requirements of the Directive apply to the manufacturing process and supply of this product. These are not covered by this certificate.

The marking of the product shall include the following:

	II 1G Ex ia IIC T6...T1¹⁾ Ga	II 1D Ex ia IIIC T**1) °C Da
	II 1/2G Ex ia IIC T6...T1¹⁾ Ga/Gb	II 1/2D Ex ia IIIC T**1) °C Da/Db
	II 2G Ex ia IIC T6...T1¹⁾ Gb	II 2D Ex ia IIIC T**1) °C Db

¹⁾ Temperature tables:

The temperature class for EPL Ga and Gb as well as maximum surface temperature for EPL Da and Db shall be defined by the temperature tables under consideration of ambient temperature T_a and medium temperature T_{med} .

DEKRA Testing and Certification GmbH
Bochum, 2019-11-22

Signed: Jörg-Timm Kilisch

Managing Director

13 **Appendix**

14 **EU-Type Examination Certificate**

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15 **Product description**

15.1 **Subject and type**

Pressure transmitter type OPTIBAR PM 3050

OPTIBAR PM 3050 VGKB * * ** * ***** * * * *****

Approval for explosion protection

Sealing / Process Temperature

E with cooling fins

other without cooling fins

Electronics

Housing

Electrical Connection / Material

Differential pressure transmitter type OPTIBAR DP 3050

OPTIBAR DP 3050 VGKN * * ***** * * * *****

Approval for explosion protection

Electronics

Housing

Electrical Connection / Material

In the complete type denomination, the asterisks are replaced by literals and numbers to characterize different variants without relevance for explosion protection.

15.2 Description

The OPTIBAR PM 3050 consists of the pressure meter body OPTIBAR P6000 or OPTIBAR PM61.***_, which is welded into a process connection. Both the sensor and the process connection are made of stainless steel.

The OPTIBAR DP 3050 consists of the differential pressure meter body OPTIBAR DP7000, OPTIBAR DP7000.1 or OPTIBAR DP71.***_, which mounted between pressure caps using four screws. The process can be connected to the transmitter directly at the pressure caps or with use of diaphragm seals indirectly to the pressure caps.

From the sensor to the housing, the device is permanently connected by welding. The housing is a stainless steel housing with the option of selecting the cover with and without viewing window. For the connection is a standard cable gland or connector, as well as a pressure compensation element or alternatively a blind plug. The minimal requirements of IP protection class of at least IP54 are fulfilled.

The enclosure contains an electronic insert, on which a display and adjustment module can be plugged and connected.

Listing of all used components:

Subject and type	Certificate	Standards
Pressure meter body type OPTIBAR PM61.*** *G*_and Differential pressure meter body type OPTIBAR DP71.*** *G*_.	BVS 13 ATEX E 100U IECEX BVS 13.0103U	EN 60079-0:2012+A11:2013 ¹ EN 60079-11:2012 EN 60079-26:2015
ADUM144X Series Digital Isolators	IECEX SIR 16.0091U Sira 16 ATEX 2265U	EN 60079-0:2012/A11:2013 ¹ EN 60079-11:2012

¹ No applicable technical differences

15.3 Parameters

15.3.1 Supply and signal circuit

Depending on the variant:
Connection via terminals 1 [+], 2 [-] resp.
Connection via plug

Maximum input voltage	U_i	DC	30	V
Maximum input current	I_i		130	mA
Maximum input power	P_i		1000	mW
Effective internal capacitance	C_i		1.1	nF
Effective internal inductance	L_i		118	μ H

15.3.2 Thermal parameters

15.3.2.1 Medium / Ambient temperature range

OPTIBAR PM 3050 & OPTIBAR DP 3050			
Temperature class	Maximum surface temperature	Medium / Ambient temperature range	
		Group IIC	Group IIIC
T1 ... T3	200 °C	-40 ... 85 °C	-40 ... 85 °C
T4	135 °C	-40 ... 80 °C	-40 ... 80 °C
T5 ... T6	85 °C	-40 ... 36.5 °C	-40 ... 55 °C

15.3.2.2 The relationship between maximum ambient, medium temperatures, temperature class and maximum surface temperature:

OPTIBAR DP 3050 VGKN ***			
Temperature class	Maximum surface temperature	Medium temperature range	Ambient temperature range
T1 ... T3	69 °C	-40 ... 105 °C	-40 ... 40 °C
	89 °C	-40 ... 96 °C	-40 ... 60 °C
	103 °C	-40 ... 75 °C	-40 ... 74 °C
T4	69 °C	-40 ... 105 °C	-40 ... 40 °C
	89 °C	-40 ... 96 °C	-40 ... 60 °C
	99 °C	-40 ... 81 °C	-40 ... 70 °C
T5 ... T6	54 °C	-40 ... 54 °C	-40 ... 25 °C
	65 °C	-40 ... 36.5 °C	-40 ... 36.5 °C

OPTIBAR PM 3050 VGKB ****E****			
Temperature class	Maximum surface temperature	Medium temperature range	Ambient temperature range
T1 ... T3	69 °C	-40 ... 150 °C	-40 ... 40 °C
	89 °C	-40 ... 150 °C	-40 ... 60 °C
	103 °C	-40 ... 94 °C	-40 ... 74 °C
T4	69 °C	-40 ... 135 °C	-40 ... 40 °C
	89 °C	-40 ... 135 °C	-40 ... 60 °C
	99 °C	-40 ... 119 °C	-40 ... 70 °C
T5 ... T6	54 °C	-40 ... 61 °C	-40 ... 25 °C
	65 °C	-40 ... 36.5 °C	-40 ... 36.5 °C

OPTIBAR PM 3050 VGKB **** _****			
Temperature class	Maximum surface temperature	Medium temperature range	Ambient temperature range
T1 ... T3	69 °C	-40 ... 105 °C	-40 ... 40 °C
	89 °C	-40 ... 105 °C	-40 ... 60 °C
	103 °C	-40 ... 86 °C	-40 ... 74 °C
T4	69 °C	-40 ... 105 °C	-40 ... 40 °C
	89 °C	-40 ... 105 °C	-40 ... 60 °C
	99 °C	-40 ... 98 °C	-40 ... 70 °C
T5 ... T6	54 °C	-40 ... 70 °C	-40 ... 25 °C
	65 °C	-40 ... 36.5 °C	-40 ... 36.5 °C

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17 **Special Conditions for Use**

- 17.1 The permissible ambient temperature range in dependence of the medium temperature, temperature class and maximum surface temperature is included in the temperature table.
The limits of the permissible ambient temperature range may be restricted by the used O-ring material. The used O-ring material is included in the marking. The permissible temperature ranges in dependence of the material are included in the manufacturer's instructions.
- 17.2 The equipment has to be installed in such a way that any ignition hazards caused by impact or friction can be excluded.
- 17.3 The apparatus has to be installed and used in such a way that electrostatic charging from operation, maintenance or cleaning is excluded.
- 17.4 For use as Ga / Gb or Da / Db -apparatus:
For functional reasons, the partition wall (membrane) to the wetted area has a wall thickness < 1 mm. In the application, it has to be ensured, that an impairment of the separation wall e.g. by aggressive media or mechanical hazards is excluded.
For variants with capillary connections:
The capillary connections are designed to be connected to a capillary with diaphragm seal. The filling holes are intended to bring in a fill fluid.
To prevent a Zone entrainment from Zone 0, the diaphragm seal resp. the diaphragm seal and capillary have to be suitably designed. The pressure transfer system has to be technically tight. The filling hole has to be tightly sealed.

18 **Essential Health and Safety Requirements**

The Essential Health and Safety Requirements are covered by the standards listed under item 9.

19 **Drawings and Documents**

Drawings and documents are listed in the confidential report.

We confirm the correctness of the translation from the German original.
In the case of arbitration only the German wording shall be valid and binding.

DEKRA Testing and Certification GmbH
Bochum, 2019-11-22
BVS-Hil/Mu A 20180678



Managing Director

