



OPTIBAR 5060 Supplementary instructions

Pressure transmitter

Category
ATEX II 1G, 1/2G, 2G Ex ia IIC T6...T1 Ga, Ga/Gb, Gb
IECEx Ex ia IIC T6...T1 Ga, Ga/Gb, Gb



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1.1 General notes

These safety instructions are valid for the pressure transmitter OPTIBAR * 5060 VGK5/6/D*A/W/V C/U/0/H/T with integrated electronics type Z (4...20 mA), H (4...20 mA/HART®), A (4...20 mA/HART® with SIL qualification), P (Profibus PA), F (Foundation Fieldbus), S, T (electronic differential pressure measurement) without additional electronics according to the EC type-examination certificate TÜV 14 ATEX 7516 X with the 1st supplement (certificate number on the nameplate).

The pressure-based measuring devices OPTIBAR * 5060 VGK5/6/D*A/W/V C/U/0/H/T are also used for pressure and level measurement in hazardous areas.

The measured products can also be combustible liquids, gases, mist or vapours.

The OPTIBAR * 5060 VGK5/6/D*A/W/V C/U/0/H/T consist of an electronics housing with integrated electronics module, a process connection element and a sensor, the pressure measuring cell with optionally connected chemical seal. As an option, the display and adjustment module can also be mounted.

The OPTIBAR * 5060 VGK5/6/D*A/W/V C/U/0/H/T are suitable for use in hazardous atmospheres of all combustible materials of explosion group IIA, IIB and IIC for applications requiring category 1G, 1/2G or 2G equipment.

When the OPTIBAR * 5060 VGK5/6/D*A/W/V C/U/0/H/T are installed and operated in hazardous areas, the general Ex installation regulations EN 60079-14 as well as these safety instructions must be observed.

The operating instructions as well as the installation regulations and standards that apply for explosion protection of electrical systems must always be observed.

The installation of potentially explosive systems must always be carried out by qualified personnel.

1.2 EC conformity

The manufacturer declares with the EC declaration of conformity on his own responsibility conformity with the protection goals of directive 94/9/EC acc. to EN 60079-0 and EN 60079-11 and EN 60079-26 for use in hazardous areas with gas.

The EC type test certificate forms the basis of the EC declaration of conformity:

TÜV 14 ATEX 7516 X

The "X" after the certificate number refers to special conditions for safe use of the device, which have been listed in these instructions.

If needed the EC type examination certificate can be downloaded from the manufacturer's website.

1.3 Approval according to the IECEx scheme

Conformity with IECEx standards was tested in accordance with the IECEx Certification Scheme for Explosive Atmospheres acc. to IEC 60079-0, IEC 60079-11 and IEC 60079-26. The number of the IEC certificate is:

IECEx TUR 14.0017 X

The "X" after the certificate number refers to special conditions for safe use of the device, which have been listed in these instructions.

If needed, the IEC certificate can be downloaded from the manufacturer's website.

1.4 Safety instructions

Assembly, installation, start-up and maintenance may only be performed by personnel trained in explosion protection!



CAUTION!

The operator or his agent is responsible for observing any additional standards, directives or laws if required due to operating conditions or place of installation. This applies in particular to the use of easily detachable process connections when measuring flammable media.

2.1 Device description

The pressure transmitter of the OPTIBAR 5060 series is designed to measure the pressure of vaporous, gaseous and liquid media. The pressure transmitters are supplied as standard with 2-wire, 4...20 mA signal outputs.

2.2 Marking

2.2.1 Marking for ATEX

The marking of the entire device is on the housing, where the following identification plate can be found.

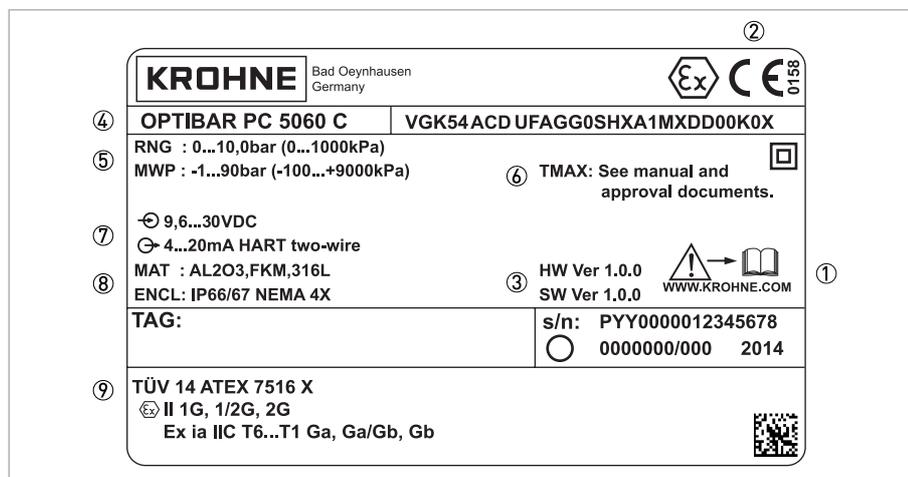


Figure 2-1: Example for an ATEX nameplate for a OPTIBAR 5060

- ① Observe the installation and operating instructions
- ② Marking of notified body and CE marking
- ③ Hardware and Software version
- ④ Product name and type code
- ⑤ Nominal range
Permissible process pressure
- ⑥ Permissible temperature range
- ⑦ Electronics power supply and signal output
- ⑧ Ingress protection and material of wetted parts
(Diaphragm, process connections, gasket and fill fluid)
- ⑨ Approvals and approval directive

2.2.2 IECEx marking

The marking of the entire device is on the housing, where the following identification plate can be found.

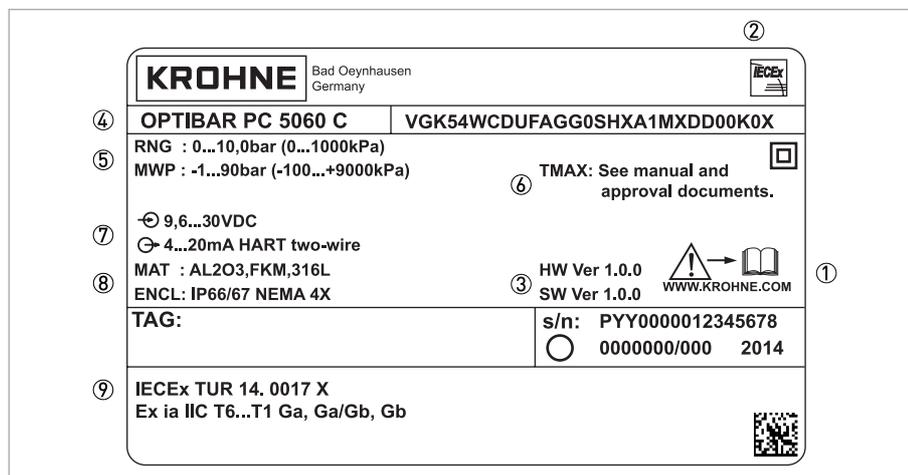


Figure 2-2: Example for an IECEx nameplate for a OPTIBAR 5060

- ① Observe the installation and operating instructions
- ② Marking of notified body
- ③ Hardware and Software version
- ④ Product name and type code
- ⑤ Nominal range
Permissible process pressure
- ⑥ Permissible temperature range
- ⑦ Electronics power supply and signal output
- ⑧ Ingress protection and material of wetted parts
(Diaphragm, process connections, gasket and fill fluid)
- ⑨ Approvals and approval directive

2.3 Flammable products

Atmospheric conditions:

An explosive atmosphere is a mixture of air and flammable gases, vapours, mists or dusts under atmospheric conditions. It is defined by the following values

$T_{\text{atm}} = -20...+60^{\circ}\text{C} / -4...+140^{\circ}\text{F}$ and $P_{\text{atm}} = 0.8...1.1 \text{ bar} / 11.6...15.9 \text{ psi}$.

Outside of this range, for most mixtures no key figures are available for the ignition behaviour.

Operating conditions:

Outside of atmospheric conditions you cannot apply to the explosion protection according to directive 94/9/EC (ATEX) – regardless of the zone assignment - due to the lack of key safety data.

2.4 Device category

Category 1G equipment (EPL-Ga equipment)

The devices are installed in hazardous areas requiring equipment category 1G.

Category 1/2G equipment (EPL-Ga/Gb equipment)

The process connection element is installed in the separating wall, which separates areas in which equipment of category 2G or 1G are required. The electronics housing is installed in hazardous areas requiring equipment of category 2G. The sensor is installed in hazardous areas requiring equipment of category 1G.

Category 2G equipment (EPL-Ga equipment)

The devices are installed in hazardous areas requiring equipment category 2G.

2.5 Protection types

The pressure transmitter is designed with protection type intrinsic safety, protection level "ia" according to EN 60079-11 or IEC 60079-11.

The marking according to ATEX is:

II 1G, 1/2G, 2G Ex ia IIC T6...T1 Ga, Ga/Gb, Gb

The marking according to IECEx is:

Ex ia IIC T6...T1 Ga, Ga/Gb, Gb

The marking contains the following information:	
II	Explosion protection, group II
1	Equipment category 1
G	Gas explosion protection
Ex ia	Intrinsically safe, level of protection "ia"
IIC	Gas group, suitable for gas groups IIC, IIB and IIA
1/2	Equipment category 1/2
2	Equipment category 2
Ga	EPL, suitable for zone 0
Ga/Gb	EPL, suitable for zone 0 / zone 1
Gb	EPL, suitable for zone 1
T6...T1	Temperature class, suitable for temperature classes T6...T1

2.6 Ambient temperature / temperature classes

OPTIBAR * 5060 VGK5/6/D*A/W/V C/U/0/H/T with integrated electronics Z (4 ...20 mA), H (4 ...20 mA/HART®) or A (4 ...20 mA/HART® with SIL qualification), S, T (electronic differential pressure measurement) P (Profibus PA), and F (Foundation Fieldbus)

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

Category 1G equipment

Temperature class	Ambient temperature range at the electronics and media temperature range at the sensor
T6	-20...+23°C / -4...+73.4°F
T5, T4, T3, T2, T1	-20...+60°C / -4...+140°F

For applications requiring equipment category 1G, the process pressure of the media must be between 0.8...1.1 bar. With the stated permissible ambient temperatures, the 80% consideration of section 6.4.2/EN 1127-1 is taken into account. The application conditions in areas without hazardous mixtures are specified in the manufacturer information.

Category 1/2G equipment

Temperature class	Ambient temperature range at the electronics (zone 1)	Media temperature range at the sensor (zone 0)
T6	-50...+39°C / -58...+102.2°F	-20...+23°C / -4...+73.4°F
T5, T4, T3, T2, T1	-50...+70°C / -58...+158°F	-20...+60°C / -4...+140°F

For applications requiring equipment category 1/2G, the process pressure of the media must be between 0.8...1.1 bar. With the stated permissible ambient temperatures, the 80% consideration of section 6.4.2/EN 1127-1 is taken into account. If OPTIBAR * 5060 VGK5/6/D*A/W/V C/U/0/H/T are operated at temperatures higher than those specified in the table above, please make sure by means of appropriate measures that there is no danger of ignition from the hot surface. The maximum permissible temperature of the electronics/housing should not exceed the values given in the table above. The application conditions in areas without hazardous mixtures are specified in the manufacturer information.

Category 2G equipment

Temperature class	Ambient temperature range at the electronics	Media temperature range at the sensor
T6	-50...+39°C / -58...+102.2°F	-50...+39°C / -58...+102.2°F
T5	-50...+70°C / -58...+158°F	-50...+100°C / -58...+212°F
T4	-50...+50°C / -58...+122°F	-50...+135°C / -58...+175°F
T3, T2, T1	-50...+50°C / -58...+122°F	-50...+200°C / -58...+392°F

If OPTIBAR * 5060 VGK5/6/D*A/W/V C/U/0/H/T are operated at temperatures higher than those specified in the table above, please make sure by means of appropriate measures that there is no danger of ignition from the hot surface. The maximum permissible temperature of the electronics/housing should not exceed the values given in the table above. The application conditions in areas without hazardous mixtures are specified in the manufacturer information.

2.6.1 Temperature derating



INFORMATION!

Valid for use as equipment of category 2G or zone 1.

OPTIBAR PC 5060 C (130°C / 266°F)

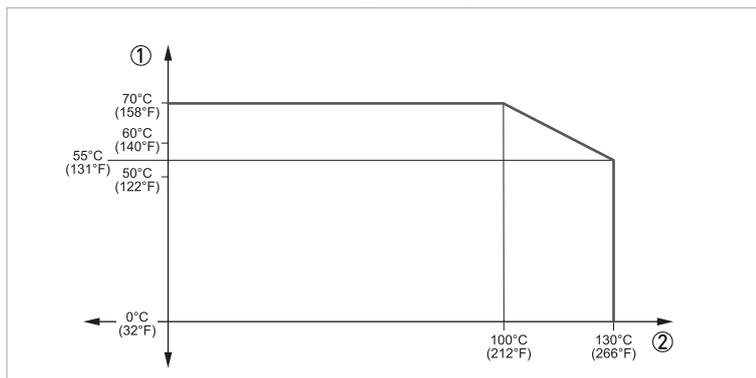


Figure 2-3: Temperature derating - process temperature version (130°C / 266°F)

- ① Ambient temperature housing
- ② Process temperature

OPTIBAR PC 5060 C (150°C / 302°F)

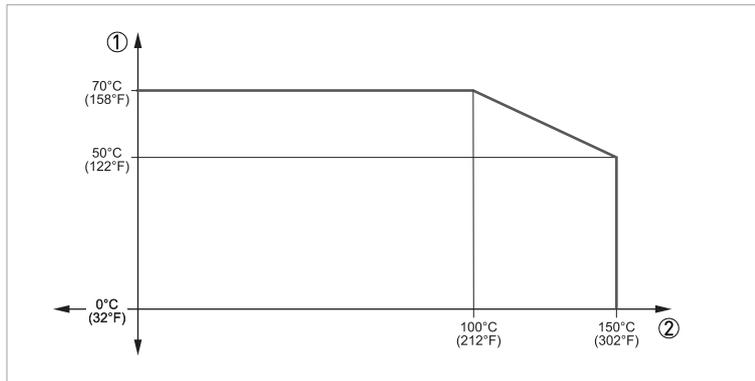


Figure 2-4: Temperature derating - process temperature version (150°C / 302°F)

- ① Ambient temperature housing
- ② Process temperature

OPTIBAR PM 5060 C

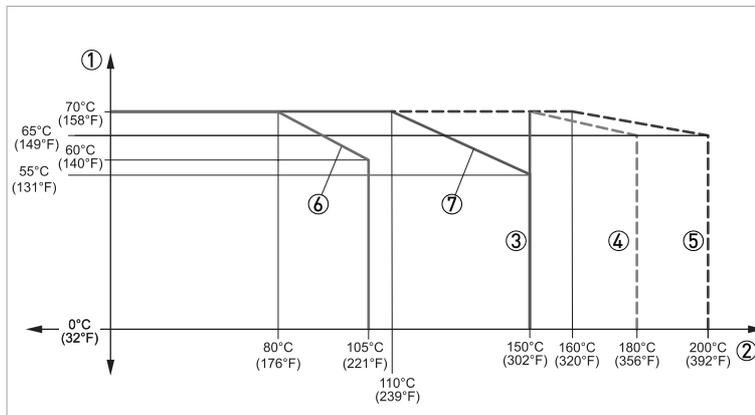


Figure 2-5: Temperature derating

- ① Ambient temperature housing
- ② Process temperature
- ③ Metallic - ceramic measuring cell, process temperature max. 150°C / 302°F
- ④ Metallic - ceramic measuring cell, process temperature max. 180°C / 356°F
- ⑤ Metallic - ceramic measuring cell, process temperature max. 200°C / 393°F
- ⑥ Piezoresistive or strain gauge measuring cell, process temperature without cooling elements max. 105°C / 221°F
- ⑦ Piezoresistive or strain gauge measuring cell, process temperature with cooling elements max. 150°C / 302°F

2.7 Electrical data

2.7.1 With electronics Z (4...20 mA), H (4...20 mA/HART[®]), A (4...20 mA/HART[®] with SIL qualification)

OPTIBAR * 5060 VGK5/6/D*A/W/V C/U/0/H/T with integrated electronics Z (4...20 mA), H (4...20 mA/HART [®]) or A (4...20 mA/HART [®] with SIL qualification), version with single chamber housing A, K V or 8	
Supply and signal circuit: (Terminals 1[+], 2[-] in the "Ex-i" electronics compartment or connector	In protection type intrinsic safety Ex ia IIC/IIB
	Only for connection to a certified, intrinsically safe circuit
	Maximum values
	<ul style="list-style-type: none"> • U_i [V]: 30 V • I_i [mA]: 131 mA • P_i [mW]: 983 mW
	The effective internal capacitance C_i is negligibly small.
	In the version with permanently mounted connection cable, In the version with permanently mounted connection cable, $C_{i \text{ wire/wire}} = 150 \text{ pF/m}$ and $C_{i \text{ wire/shield}} = 270 \text{ pF/m}$ must be taken into account.
The effective inner inductance L_i is $L_i \leq 5 \mu\text{H}$. In the version with permanently mounted connection cable, $L_i = 0.62 \mu\text{H/m}$ must be taken into account additionally.	

OPTIBAR * 5060 VGK5/6/D*A/W/V C/U/0/H/T with integrated electronics Z (4...20 mA), H (4...20 mA/HART [®]) or A (4...20 mA/HART [®] with SIL qualification), version with double chamber housing D, W or R	
Supply and signal circuit: (Terminals 1[+], 2[-] in "Ex-i" terminal compartment	In protection type intrinsic safety Ex ia IIC/IIB
	Only for connection to a certified, intrinsically safe circuit
	Maximum values
	<ul style="list-style-type: none"> • U_i [V]: 30 V • I_i [mA]: 131 mA • P_i [mW]: 983 mW
	The effective internal capacitance C_i is negligibly small.
	In the version with permanently mounted connection cable, In the version with permanently mounted connection cable, $C_{i \text{ wire/wire}} = 150 \text{ pF/m}$ and $C_{i \text{ wire/shield}} = 270 \text{ pF/m}$ must be taken into account.
The effective inner inductance L_i is $L_i \leq 10 \mu\text{H}$. In the version with permanently mounted connection cable, $L_i = 0.62 \mu\text{H/m}$ must be taken into account additionally.	

OPTIBAR * 5060 VGK5/6/D*A/W/V C/U/0/H/T with integrated electronics Z (4...20 mA), H (4...20 mA/HART®) or A (4...20 mA/HART® with SIL qualification)

Indicating and adjustment circuits:
(terminals 5,6,7,8) ①,②

In protection type intrinsic safety Ex ia IIC

For connection of an OPTIBAR * 5060 with integrated electronics S or T for electronic differential pressure measurement.
The rules for interconnecting intrinsically safe circuits between OPTIBAR * 5060 VGK5/6/D*A/W/V C/U/0/H/T and OPTIBAR * 5060 with electronics S or T are observed when the overall inductance and overall capacity of the connecting cable between OPTIBAR * 5060 VGK5/6/D*A/W/V C/U/0/H/T and OPTIBAR * 5060 with electronics S or T $L_{\text{cable}} = 330 \mu\text{H}$ and $C_{\text{cable}} = 1.98 \mu\text{F}$ are not exceeded. Take into account the following cable inductances L_i and cable capacities C_i when using the supplied connection cable between OPTIBAR * 5060 VGK5/6/D*A/W/V C/U/0/H/T and OPTIBAR * 5060 with electronics S or T.

- $L_i = 0.62 \mu\text{H/m}$
- $C_{i \text{ wire/wire}} = 150 \text{ pF/m}$
- $C_{i \text{ wire/shield}} = 270 \text{ pF/m}$

① In the "Ex-i" electronics compartment for OPTIBAR in version with single chamber housing A, K V or 8.
② In the "Ex-i" terminal compartment for OPTIBAR in version with double chamber housing D, W or R.

Intrinsically safe circuit for the display and adjustment module

OPTIBAR * 5060 VGK5/6/D*A/W/V C/U/0/H/T with integrated electronics Z (4...20 mA), H (4...20 mA/HART®) or A (4...20 mA/HART® with SIL qualification), version with single chamber housing A, K, V or 8

Circuit for the display and adjustment module: (spring contacts in the "Ex-i" electronics compartment)

In protection type intrinsic safety Ex ia IIC

Only for connection to the display and adjustment module.

OPTIBAR * 5060 VGK5/6/D*A/W/V C/U/0/H/T with integrated electronics Z (4...20 mA), H (4...20 mA/HART®) or A (4...20 mA/HART® with SIL qualification), version with double chamber housing D, W or R	
Circuit for the display and adjustment module: (spring contacts in the "Ex-i" terminal compartment)	In protection type intrinsic safety Ex ia IIC
	Only for connection to the display and adjustment module.
and circuit for the display and adjustment module: (spring contacts in the "Ex-i" electronics compartment)	In protection type intrinsic safety Ex ia IIC
	Only for connection to the display and adjustment module.
	In the double chamber housing version, the display and adjustment module in the terminal compartment should only be equipped if there is no OPTIBAR P* 5060 with electronics S or T connected.

The intrinsically safe circuits are galvanically isolated from parts which can be grounded.

The metallic parts of OPTIBAR * 5060 VGK5/6/D*A/W/V C/U/0/H/T are electrically connected with the ground terminals.

For applications requiring category 1G or 1/2G equipment, the intrinsically safe supply and signal circuits must correspond to protection level ia.

For applications that require category 1G or 1/2G equipment, it is preferable to connect the OPTIBAR * 5060 VGK5/6/D*A/W/V C/U/0/H/T to appropriate equipment with galvanically isolated, intrinsically safe circuits.

2.7.2 With electronics P (Profibus PA), F (Foundation Fieldbus)

OPTIBAR * 5060 VGK5/6/D*A/W/V C/U/0/H/T with integrated electronics P (Profibus PA), F (Foundation Fieldbus), version with single chamber housing A, K, V or 8)	
Supply and signal circuit: (Terminals 1[+], 2[-] in the "Ex-i" electronics compartment or connector)	In protection type intrinsic safety Ex ia IIC
	Only for connection to a certified, intrinsically safe circuit. Maximum values <ul style="list-style-type: none"> • U_i [V]: 17.5 V • I_i [mA]: 500 mA • P_i [W]: 5.5 W <p>The equipment is suitable for connection to a fieldbus system according to the FISCO model (EN 60079-11), e.g. Profibus PA.</p> <p>or</p> <ul style="list-style-type: none"> • U_i [V]: 24 V • I_i [mA]: 250 mA • P_i [W]: 1.2 W <p>The effective internal capacitance C_i is negligibly small. In the version with permanently mounted connection cable, $C_{i \text{ wire/wire}} = 150 \text{ pF/m}$ and $C_{i \text{ wire/shield}} = 270 \text{ pF/m}$ must be taken into account. The effective internal inductance L_i is negligibly small. In the version with permanently mounted connection cable, $L_i = 0.62 \text{ } \mu\text{H/m}$ must be taken into account additionally.</p>

OPTIBAR * 5060 VGK5/6/D*A/W/V C/U/0/H/T with integrated electronics P (Profibus PA), F (Foundation Fieldbus), version with double chamber housing D, W, or R	
Supply and signal circuit: (Terminals 1[+], 2[-] in the "Ex-i" electronics compartment or connector)	<p>In protection type intrinsic safety Ex ia IIC for equipment of category 1G or category 1/2G and Ex ia IIC or Ex ib IIC for equipment of category 2G.</p> <p>Only for connection to a certified, intrinsically safe circuit.</p> <p>Maximum values</p> <ul style="list-style-type: none"> • U_i [V]: 17.5 V • I_i [mA]: 500 mA • P_i [W]: 5.5 W <p>The equipment is suitable for connection to a fieldbus system according to the FISCO model (EN 60079-11), e.g. Profibus PA.</p> <p>or</p> <ul style="list-style-type: none"> • U_i [V]: 24 V • I_i [mA]: 250 mA • P_i [W]: 1.2 W <p>The effective internal capacitance C_i is negligibly small. In the version with permanently mounted connection cable, $C_{i \text{ wire/wire}} = 150 \text{ pF/m}$ and $C_{i \text{ wire/shield}} = 270 \text{ pF/m}$ must be taken into account. The effective inner inductance is $L_i \leq 5 \text{ }\mu\text{H}$. In the version with permanently mounted connection cable, $L_i = 0.62 \text{ }\mu\text{H/m}$ must be taken into account additionally.</p>

OPTIBAR * 5060 VGK5/6/D*A/W/V C/U/0/H/T with integrated electronics P (Profibus PA), F (Foundation Fieldbus)	
Indicating and adjustment circuits: (terminals 5, 6, 7, 8) ③,④	<p>In protection type intrinsic safety Ex ia IIC</p> <p>For connection to the intrinsically safe circuit or for connection of an OPTIBAR * 5060 VGK5/6/D*A/W/V C/U/0/H/T with integrated electronics S or T for electronic differential pressure measurement. The rules for interconnecting intrinsically safe circuits between OPTIBAR * 5060 VGK5/6/D*A/W/V C/U/0/H/T and OPTIBAR * 5060 with electronics S or T are observed when the overall inductance and overall capacity of the connecting cable between OPTIBAR * 5060 VGK5/6/D*A/W/V C/U/0/H/T and OPTIBAR * 5060 with electronics S or T $L_{\text{cable}} = 212 \text{ }\mu\text{H}$ and $C_{\text{cable}} = 1.98 \text{ }\mu\text{F}$ are not exceeded. Take into account the following cable inductances L_i and cable capacities C_i when using the supplied connection cable between OPTIBAR * 5060 VGK5/6/D*A/W/V C/U/0/H/T and OPTIBAR * 5060 with electronics S or T.</p> <ul style="list-style-type: none"> • $L_i = 0.62 \text{ }\mu\text{H/m}$ • $C_{i \text{ wire/wire}} = 150 \text{ pF/m}$ • $C_{i \text{ wire/shield}} = 270 \text{ pF/m}$
<p>③ In the "Ex-i" electronics compartment for OPTIBAR in version with single chamber housing A, K V or 8. ④ In the "Ex-i" terminal compartment for OPTIBAR in version with double chamber housing D, W or R.</p>	

Intrinsically safe circuit for the display and adjustment module OPTIBAR * 5060 VGK5/6/D*A/W/V C/U/0/H/T with integrated electronics P (Profibus PA), F (Foundation Fieldbus), version with single chamber housing A, K, V or 8)	
Circuit for the display and adjustment module: (spring contacts in the "Ex-i" electronics compartment)	In protection type intrinsic safety Ex ia IIC
	Only for connection to the display and adjustment module.

OPTIBAR * 5060 VGK5/6/D*A/W/V C/U/0/H/T with integrated electronics P (Profibus PA), F (Foundation Fieldbus), version with double chamber housing D, W, or R)	
Circuit for the display and adjustment module: (spring contacts in the "Ex-i" terminal compartment)	In protection type intrinsic safety Ex ia IIC
	Only for connection to the display and adjustment module.
or circuit for the display and adjustment module: (spring contacts in the "Ex-i" electronics compartment)	In protection type intrinsic safety Ex ia IIC
	Only for connection to the display and adjustment module.
	In the double chamber housing version, the display and adjustment module in the terminal compartment should only be equipped if there is no external display unit or OPTIBAR * 5060 with electronics S or T connected.

The intrinsically safe circuits are galvanically isolated from parts which can be grounded.

The metallic parts of OPTIBAR * 5060 VGK5/6/D*A/W/V C/U/0/H/T are electrically connected with the ground terminals.

For applications requiring category 1G or 1/2G equipment, the intrinsically safe supply and signal circuits must correspond to protection level ia.

For applications that require category 1G or 1/2G equipment, it is preferable to connect the OPTIBAR * 5060 VGK5/6/D*A/W/V C/U/0/H/T to appropriate equipment with galvanically isolated, intrinsically safe circuits.

2.7.3 With electronics S or T for electronic differential pressure measurement

OPTIBAR * 5060 VGK5/6/D*A/W/V C/U/0/H/T with integrated electronics S or T, only single chamber housing version)	
Supply and signal circuit: (terminals 5,6,7,8 in the electronics compartment)	<p>In protection type intrinsic safety Ex ia IIC</p> <p>For connection to the intrinsically safe circuit of an OPTIBAR * 5060 VGK5/6/D**C with integrated electronics H, A, P, F for differential pressure measurement.</p> <p>The rules for interconnecting intrinsically safe circuits between OPTIBAR * 5060 with electronics S or T and the OPTIBAR * 5060 VGK5/6/D**C are observed when the overall inductance and overall capacity of the connecting cable between OPTIBAR * 5060 VGK5/6/D**C and OPTIBAR * 5060 with electronics S or T</p> <p>$L_{\text{cable}} = 330 \mu\text{H}$ and $C_{\text{cable}} = 2.00 \mu\text{F}$ are not exceeded.</p> <p>Take into account the following cable inductances L_i and cable capacities C_i when using the supplied connection cable between OPTIBAR * 5060 VGK5/6/D*A/W/V C/U/0/H/T and OPTIBAR * 5060 with electronics S or T.</p> <ul style="list-style-type: none"> • $L_i = 0.62 \mu\text{H/m}$ • $C_{i \text{ wire/wire}} = 150 \text{ pF/m}$ • $C_{i \text{ wire/shield}} = 270 \text{ pF/m}$

The intrinsically safe circuits are galvanically isolated from parts which can be grounded.

The metallic parts of OPTIBAR * 5060 VGK5/6/D*A/W/V C/U/0/H/T are electrically connected with the ground terminals.

For applications requiring category 1G or 1/2G equipment, the intrinsically safe supply and signal circuits must correspond to protection level ia.

For applications that require category 1G or 1/2G equipment, it is preferable to connect the OPTIBAR * 5060 VGK5/6/D*A/W/V C/U/0/H/T to appropriate equipment with galvanically isolated, intrinsically safe circuits.

2.7.4 With separate cable outlet

OPTIBAR * 5060 VGK5/6/D*A/W/V C/U/0/H/T version with separate cable outlet	
Circuit between sensor unit and external electronics (terminal 1 - yellow, terminal 2 - white, terminal 3 - red, terminal 4 - black)	In protection type intrinsic safety Ex ia IIC
	For the OPTIBAR * 5060 VGK5/6/D*A/W/V C/U/0/H/T in the version with the permanently mounted cable to the measuring sensor unit and external electronics, the length of the supplied cable between the external housing and the measuring sensor unit should not exceed 180 m.

The intrinsically safe circuits are galvanically isolated from parts which can be grounded.

The metallic parts of OPTIBAR * 5060 VGK5/6/D*A/W/V C/U/0/H/T are electrically connected with the ground terminals.

For applications requiring category 1G or 1/2G equipment, the intrinsically safe supply and signal circuits must correspond to protection level ia.

For applications that require category 1G or 1/2G equipment, it is preferable to connect the OPTIBAR * 5060 VGK5/6/D*A/W/V C/U/0/H/T to appropriate equipment with galvanically isolated, intrinsically safe circuits.

3.1 Installation

Installation and setup must be carried out according to the applicable installation standards (e.g. EN 60079-14 or IEC 60079-14) by qualified personnel trained in explosion protection. The information given in the manuals and the supplementary instructions must be observed at all times.

Install pressure transmitters so that:

- there is sufficient overvoltage protection in the event of lightning or overvoltage.
- they are not in a pneumatic flow.
- excessive dust deposits (over 5 mm) and complete dust coverage are prevented.
- there is no danger from mechanical impact effects.
- the device is accessible for any necessary visual inspections and can be viewed from all sides.
- the nameplate is clearly visible.
- it can be operated from a location with secure footing.



CAUTION!

The manufacturer is not liable for any damage resulting from improper use or use other than the intended purpose. This applies in particular to hazards due to insufficient corrosion resistance and suitability of the materials in contact with product.

4.1 Protection against static electricity

The OPTIBAR * 5060 VGK5/6/D*A/W/V C/U/0/H/T in versions with electrostatically chargeable plastic parts, such as e.g. plastic housing, metal housing with inspection window, with plastic-coated sensors, suspension cable or suspension hose, distance tube or connection cable with the remote version, a caution label points out the safety measures that must be taken with regard to electrostatic charges during operation.



Caution: Plastic part! Risk of electrostatic charge!

- Avoid friction
- No dry cleaning
- Do not mount in areas with flowing, non-conductive products
- Setup / Installation
The OPTIBAR * 5060 VGK5/6/D*A/W/V C/U/0/H/T are to be setup/installed so that electrostatic charges during operation, maintenance and cleaning are excluded and process-related electrostatic charges, e.g. due to medium flowing by, are excluded.

4.2 Use of an overvoltage arrester

If necessary, a suitable overvoltage arrester can be connected in front of the OPTIBAR * 5060 VGK5/6/D*A/W/V C/U/0/H/T. When used as category 1G or 1/2G equipment, as far as necessary analogue, a suitable overvoltage arrester must be connected in front as protection against voltage surges according to EN 60079-14 or IEC 60079-14 Chapter 12.3.

4.3 Grounding

To avoid the danger of electrostatic charging of the metallic parts, the OPTIBAR * 5060 VGK5/6/D*A/W/V C/U/0/H/T, used as category 1G or 1/2G equipment, must be electrostatically connected to the local equipotential bonding (transfer resistance $\leq 1 \text{ M}\Omega$), e. g. via the ground terminal.

4.4 Impact and friction sparks

When used as category 1G or 1/2G equipment, the OPTIBAR * 5060 VGK5/6/D*A/W/V C/U/0/H/T in aluminium/titanium versions must be mounted in such a way that sparks from impact and friction between aluminium/titanium and steel (except stainless steel, if the presence of rust particles can be excluded) cannot occur.

4.5 Material resistance

For applications requiring 1G or 1/2G category equipment the OPTIBAR * 5060 VGK5/6/D*A/W/V C/U/0/H/T must only be used in products against which the wetted materials are sufficiently resistant.

4.6 Installation / mounting

The OPTIBAR * 5060 VGK5/6/D*A/W/V C/U/0/H/T must be mounted such that the sensor is effectively secured against touching the vessel wall, under consideration of other vessel installations and flow conditions in the vessel. This applies especially to suspension pressure transmitters and versions with distance tube lengths over 3 m.

4.7 Mounting with remote housing

With the version with remote housing of the pressure transmitter OPTIBAR * 5060 VGK5/6/D*A/W/V C/U/0/H/T the equipotential bonding must be provided in the complete mounting area of the connection cable between electronics housing and transmitter housing.







KROHNE product overview

- Electromagnetic flowmeters
- Variable area flowmeters
- Ultrasonic flowmeters
- Mass flowmeters
- Vortex flowmeters
- Flow controllers
- Level meters
- Temperature assemblies
- Pressure transmitters
- Analysis products
- Products and systems for the oil & gas industry
- Measuring systems for the marine industry

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