Safety instructions
CCOE approval
VEGAPULS 64

Intrinsic safety "i"

4 … 20 mA/HART - two-wire

Document ID: 62495

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Supplementary documentation:

- Operating Instructions VEGAPULS 64
- Quick setup guide VEGAPULS 64
- Letter P427744/1 By Government of India (Document ID: 62496)

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1 Area of applicability

These safety instructions apply to the VEGAPULS 64 of type series:

- VEGAPULS PS64(*).DC****HX*****(*)(*)
- VEGAPULS PS64(*).DO****HX*****(*)(*)
- VEGAPULS PS64(*).DU****HX*****(*)(*)

With the electronics versions:

- H - Two-wire 4 … 20 mA/HART

According to Letter P427744/1 By Government of India (certificate number on the type label) and for all instruments with safety instruction 62495.

The classification as well as the respective standards are stated in the EU type approval certificate:

- EN 60079-0: 2012 + A11: 2013
- EN 60079-11: 2012
- EN 60079-26: 2015

Type of protection marking:

- Ex ia IIC T6 … T1 Ga, Ga/Gb, Gb

2 Important specification in the type code

VEGAPULS PS64(*).abcefghijklm(*)(*)

Position		Feature	Description
a	Scope	D	India
b	Approval	C	Ex ia IIC T6…T1 Ga, Ga/Gb, Gb
		O	Ex ia IIC T6…T1 Ga, Ga/Gb, Gb + Ship approval
		U	Ex ia IIC T6…T1 Ga, Ga/Gb, Gb + Overfill protection (WHG, VLAR-EM)
c	Antenna version / Second Line of Defense	B	Plastic horn antenna / without
		D	Plastic horn antenna / with
		T	Thread with integrated horn antenna / without
		U	Thread with integrated horn antenna / with
		F	Flange with encapsulated antenna system / without
		G	Flange with encapsulated antenna system / with
		H	Hygienic fitting with encapsulated antenna system / without
		I	Hygienic fitting with encapsulated antenna system / with
de	Process fitting	**	Two-digit alphanumerical code for threaded connections, pipe connections and industrial flanges acc. to ASME, BS, DIN, EN, GOST, HG/T, JIS and for other international, national or industrial standards, regulations or standards, with suitable pressure and temperature specifications

Position		Feature	Description
f	Material / Seal / Process temperature	A	PEEK / FKM (SHS FPM 70C3 GLT) / -40 … +130 °C
		B	PEEK / FKM (SHS FPM 70C3 GLT) / -40 … +200 °C
		G	PEEK / FKM (Kalrez 6375) / -20 … +130 °C
		H	PEEK / FKM (Kalrez 6375) / -20 … +200 °C
		F	PEEK / EPDM (A+P 70.10-02) / -40 … +130 °C
		R	PEEK / FFKM (Kalrez 6230) / -15 … +130 °C
		S	PEEK / FFKM (Kalrez 6230) / -15 … +200 °C
		T	PTFE / FFKM (Kalrez 6230) / -15 … +130 °C
		U	PTFE / FKM (75,5/VA75F) / -20 … +130 °C
		V	PTFE / EPDM (70.10-02) / -20 … +130 °C
		I	PTFE / PTFE / -40 … +130 °C
		J	PTFE / PTFE / -40 … +200 °C
		W	PTFE / PTFE / -196 … +200 °C
		K	PTFE (8 mm) / PTFE / -40 … +130 °C
		L	PTFE (8 mm) / PTFE / -40 … +200 °C
		Y	PTFE (8 mm) / PTFE / -196 … +200 °C
		P	PFA (8 mm) / PFA / -40 … +130 °C
		Q	PFA (8 mm) / PFA / -40 … +200 °C
		C	PP / PP / -40 … +80 °C
		D	PP / FKM (SHS FPM 70C3 GLT) / -40 … +80 °C
		E	PP / EPDM (COG AP310) / -40 … +80 °C
g	Electronics	H	Two-wire, 4 … 20 mA/HART, U = 9.6 … 30 V DC
h	Supplementary electronics	X	without

Position		Feature	Description
i	Housing / Protection	K	Plastic single chamber / IP 66/IP 67
		A	Aluminium single chamber / IP 66/IP 68 (0.2 bar)
		H	Special colour Aluminium single chamber / IP 66/IP 68 (0.2 bar)
		3	Aluminium single chamber / IP 66/IP 68 (1 bar)
		D	Aluminium double chamber / IP 66/IP 68 (0.2 bar)
		S	Special colour Aluminium double chamber / IP 66/IP 68 (0.2 bar)
		4	Aluminium double chamber / IP 66/IP 68 (1 bar)
		Y	Aluminium double chamber / IP 66/IP 67 with M12 x 1 for VEGADIS 61/81
		V	Stainless steel single chamber (precision casting) / IP 66/IP 68 (0.2 bar)
		5	Stainless steel single chamber (precision casting) / IP 66/IP 68 (1 bar)
		8	Stainless steel single chamber (electropolished) / IP 66/IP 68 (0.2 bar)
		W	Stainless steel double chamber / IP 66/IP 68 (0.2 bar)
		Q	Stainless steel double chamber / IP 66/IP 67 with M12 x 1 for VEGADIS 61/81
		R	Plastic double chamber / IP 66/IP 67
		X	Plastic double chamber / IP 66/IP 67 with M12 x 1 for VEGADIS 61/81
		Z	Stainless steel single chamber (electropolished) / IP 66/IP 68 (0.2 bar) / IP 69K
j	Connection / Cable entry or screw plug	D	M20 x 1.5 / closing screw
		1	M20 x 1.5 / without
		N	1½ NPT / closing screw
		Q	1½ NPT / without
		*	One-digit alphanumerical code for further suitable fittings, cable entries and closing screws.
k	Display and adjustment module PLICSCOM	X	without
		A	mounted
		F	without; lid with inspection window
		B	Laterally mounted
		K	mounted; with Bluetooth, magnetic pen operation
		L	laterally mounted; with Bluetooth, magnetic pen operation
l	Additional equipment	X	without
		V	Purging connection with reflux valve
m	Certificates	X	No
		M	Yes

In the following, all above mentioned versions are called VEGAPULS 64. If parts of these safety instructions refer only to certain versions, then these will be mentioned explicitly with their type code.

3 General information

The VEGAPULS 64 in ignition protection type intrinsic safety "i" are used for detection of the distance between product surface and sensor by means of high frequency, electromagnetic waves in the GHz range.

The electronics uses the running time of the signals reflected by the product surface to calculate the distance to the product surface.

The VEGAPULS 64 consist of an electronics housing, a process connection element and a sensor or an antenna.

The VEGAPULS 64 are suitable for applications in hazardous atmospheres of all combustible materials of explosion groups IIA, IIB and IIC.

The VEGAPULS 64 are suitable for applications requiring category 1G (EPL Ga), 1/2G (EPL Ga/Gb) or 2G (EPL Gb) instruments.

4 Application area

Category 1G (EPL Ga instruments)
The VEGAPULS 64 with the mechanical fixing element are installed in hazardous areas of zone 0 requiring category 1G (EPL Ga) instruments.

Category 1/2G (EPL Ga/Gb instruments)
The VEGAPULS 64 with mechanical fixing element are installed in hazardous areas of zone 1 requiring instruments of category 2G (EPL Gb). The mechanical fixing element, process connection element is installed in the separating wall, which separates areas requiring instruments of category 2G (EPL Gb) or 1G (EPL Ga). The sensor measuring system is installed in hazardous areas of zone 0 requiring instruments of category 1G (EPL Ga).

Category 2G (EPL Gb instruments)
The VEGAPULS 64 with the mechanical fixing element are installed in hazardous areas of zone 1 requiring category 2G (EPL Gb) instruments.

VEGA Instrument	2G (EPL Gb)	1/2G (EPL Ga/Gb)	1G (EPL Ga)
Ex Zone 1 			
Ex Zone 0 			

5 Specific conditions of use ("X" identification)

The following overview is listing all special properties of VEGAPULS 64, which make a labelling with the symbol "X" behind the certificate number necessary.

Electrostatic charging (ESD)
You can find the details in chapter "*Electrostatic charging (ESD)*" of these safety instructions.

Ambient temperature
The ambient temperature range stipulated in EN 60079-0 can be limited.

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

Impact and friction sparks
The VEGAPULS 64 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
Resistance between aluminium housing to metal measuring point identification plate is > 10^9 Ohm.

The capacitance of the metal measuring point identification plate was measured with 15 pF.

6 Additional instructions for safe operation

- 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.
- The operator must ensure that the medium temperature in the EPL Ga range within the process vessel is not higher than 80 % of the self-ignition temperature of the concerned medium (in °C) and does not exceed the max. permissible flange temperature depending on the temperature class. The parts of the level measuring instrument which during operation are in contact with flammable products, must be integrated in the periodic overpressure test of the plant.
- If parts of the VEGAPULS 64 within the EPL Ga area are in contact with the medium and made of a material with an electrical conductivity of less than 10-8 S/m, a min. conductivity of the measured substance of at least 10-8 S/m must be ensured to avoid danger caused by electrostatic charge. If this is not possible, the level measuring instrument must not be used if there are strong charge-generating processes exist, such as e.g. automatic friction and separating processing, sparkling electrons etc. Particularly the antenna of the level measuring instrument must not be mounted in the pneumatic flow rate.
- The VEGAPULS 64 must be installed in such a way that sensor (antenna) does not touch the vessel wall. Especially the inner tank structure, the flow conditions in the tank and the antenna length must be taken into account.
- The installation of the antenna of VEGAPULS PS64(*).*C****H******(*)(*) with instrument category 1 must be only carried out with process pressures between 0.8 and 1.1 bar.

For device category 2 the following process pressures are applicable depending on the antenna version:

VEGAPULS PS64	Version	Process pressure
Plastic horn antenna	PS64(*).*CB/D**C/D/EH******(*)(*)	-1 … +2 bar
Thread with integrated horn antenna	PS64(*).*CT/U**A/FH******(*)(*) PS64(*).*CT/U**GH******(*)(*) PS64(*).*CT/U**RH******(*)(*) PS64(*).*CT/U**BH******(*)(*) PS64(*).*CT/U**HH******(*)(*) PS64(*).*CT/U**SH******(*)(*)	-1 … +20 bar
Flange with encapsulated antenna system	PS64(*).*CF/G**I/K/PH******(*)(*) PS64(*).*CF/G**J/L/QH******(*)(*)	-1 … +25 bar

VEGAPULS PS64	Version	Process pressure
Flange with encapsulated antenna system (low temperature version)	PS64(*).*CF/G**W/YH******(*)(*)	-1 … +25 bar
Hygienic fitting with encapsulated antenna system	PS64(*).*CH/I**I/T/U/VH******(*)(*) PS64(*).*CH/I**JH******(*)(*)	-1 … +16 bar

- For process pressures outside the standard atmospheric conditions of 80 kPa (0.8 bar) to 110 kPa (1.1 bar) additional requirements can be valid.
- In the constructive version of the rinsing connection it must be ensured that when using in the EPL Ga/Gb area, protection IP 67 is ensured at the connection to the reflux valve. After removal of the reflux valve, the opening must be closed with a suitable plug screw in order to maintain protection IP 67.
- In the version with ball valve it must be ensured that before separating the flange connection, the valve must be closed.

Connection conditions

- Unused openings must be covered. 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.
- The connection cables of VEGAPULS 64 must be connected in a housing meeting the requirements of the accepted ignition protection type according to IEC/EN 60079-0, section 1, if the connection is located in the hazardous area
- The connection cable of VEGAPULS 64 has to be wired fix and in such a way that damages can be excluded
- If the temperature at the inlet components exceeds 70 °C, temperature-resistant connection cables must be used
- The VEGAPULS 64 must be integrated in the local potential equalization of the hazardous areas (contact resistor ≤ 1 MΩ)
- Use the instrument only in media against which the wetted parts are sufficiently resistant
- If necessary, a suitable overvoltage arrester can be connected in front of the VEGAPULS 64

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 EU type approval certificate 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
- Use only approved spare parts
- 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.
- Vessel installations and probable flow must be taken into account

Mounting
Keep in mind for instrument mounting
- Mechanical damage on the instrument must be avoided
- Mechanical friction must be avoided
- 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

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 VEGAPULS 64 being in contact with flammable media during operation must be included in the periodic overpressure test of the plant.

8 Potential equalization/Grounding
- Integrate the instruments into the local potential equalisation, e.g. via the internal or external earth terminal
- The potential equalization terminal must be secured against loosening and twisting
- 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

9 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:
- 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

10 Electrical data

The electrical data listed in the following are valid for:

VEGAPULS PS64(*).DC/O/U**HX******(*)(*)**

If then the VEGAPULS 64 is mentioned, it is valid for the above listed versions of VEGAPULS 64.

Supply and signal circuit:	
Terminals 1[+], 2[-] in electronics compartment of the single chamber housing or Terminals 1[+], 2[-] in connection compartment of the double chamber housing	In type of protection intrinsic safety Ex ia IIC For connection to a certified, intrinsically safe circuit with linear characteristics: ● U_i = 30 V ● I_i = 131 mA ● P_i = 983 mW The effective internal capacitance C_i is negligibly small. The effective internal inductance is $L_i \leq 10$ µH. In the version with permanently connected connection cable, the values for $C_{i\ cable/cable}$ = 159 pF/m and $C_{i\ cable/screen}$ = 270 pF/m must be taken into account.

Intrinsically safe display and adjustment circuit:	
Terminals 5, 6, 7, 8 in electronics compartment or plug connection	In type of protection intrinsic safety Ex ia IIC For connection to the intrinsically safe circuit of the associated external indicating unit VEGADIS 81 (PTB 02 ATEX 2136 X). The rules for the interconnection of intrinsically safe circuits between VEGAPULS 64 and the external indicating unit VEGADIS 81 are fulfilled, provided that the total inductance and total capacitance of the connection cable between VEGAPULS 64 and the external indicating unit VEGADIS 81 (L_{cable} = 212 µH and C_{cable} = 1.98 µF) are not exceeded. When using the supplied VEGA connection cable between VEGAPULS 64 and the external display unit VEGADIS 81, the values for cable inductance L_i and cable capacitance C_i listed in the following, must be taken into account. ● L_i = 0.62 µH/m ● $C_{i\ wire/wire}$ = 132 pF/m ● $C_{i\ wire/screen}$ = 208 pF/m

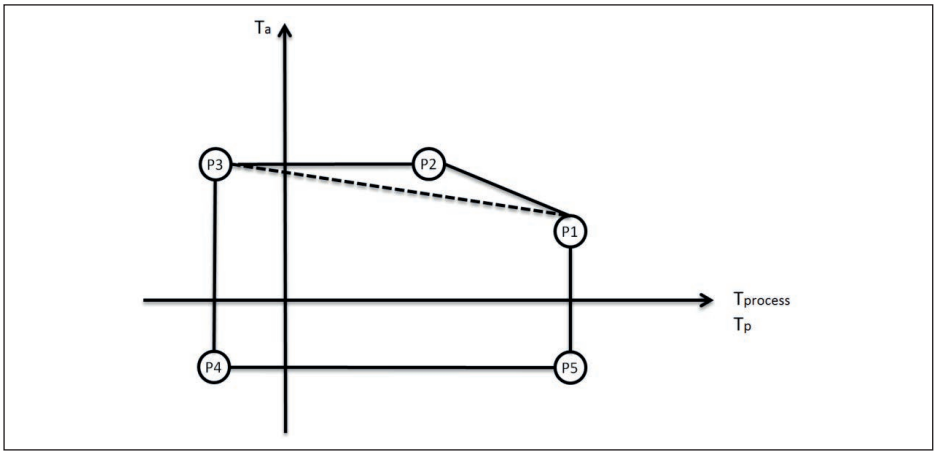
Intrinsically safe circuit of the display and adjustment module:	
Spring contacts in electronics or connection compartment	In type of protection intrinsic safety Ex ia IIC Only for connection to the corresponding display and adjustment module PLICSCOM

- The intrinsically safe supply and signal circuits are galvanically separated from parts that can be grounded.
- For applications requiring instruments of category 2G, the intrinsically safe power supply and signal circuit can correspond to protection class ia or ib. For connection to a circuit with protection class ib, the flame proofing identification is Ex ib IIC T6 Gb.
- For applications requiring instruments of category 1G or 1/2G, the intrinsically safe power supply and signal circuit must be in conformity with protection class ia.
- For applications requiring instruments of category 1G or 1/2G the VEGAPULS 64 is preferably connected to appropriate instruments with electrically isolated intrinsically safe circuits.

11 Thermal data

The permissible operating temperatures without explosion-endangered atmosphere are mentioned in the respective manufacturer instructions, e.g. operating instructions manuals.

The classification of the temperature classes of the different VEGAPULS 64 versions is specified in form of tables. The tables contain the distinctive points P1 … P5 of the graph shown below. The instrument may be operated in all operating points which are within the the points P1 … P5 defined by the graph.



Furthermore it must be observed that the graph defined by the points P1 … P5 was determined for instruments with a permissible process temperature of up to +195 °C with an isolation (heat conductance of 0.05 W/mK with 2 cm thick insulation). Two layers of insulation material with a thickness of 2 cm each were attached from the tank surface with the mentioned heat conductance.

Instruments for process temperatures of max. +80 °C or +130 °C were not isolated to determine points P1 … P5.

T-class - VEGAPULS 64 for process temperatures up to +80 °C
The following temperature tables are valid for:

VEGAPULS PS64(*).B/D**C/D/EH******(*)(*)**

If then the VEGAPULS 64 is mentioned, it is valid for the above listed versions of VEGAPULS 64.

Category 1G (EPL Ga instruments)
For applications requiring instruments of category 1G, the process pressure of the media must be between 0.8 … 1.1 bar.

The prerequisites for operation in the absence of explosive mixtures can be found in the manufac-

turer specifications.

	Aluminium housing - Antenna in Zone 0 and housing in Zone 0									
	Tp - **P1** - *Ta*		*Tp* - **P2** - *Ta*		*Tp* - **P3** - *Ta*		*Tp* - **P4** - *Ta*		*Tp* - **P5** - *Ta*	
T6	+60 °C	+43 °C	--	--	-20 °C	+56 °C	-20 °C	-20 °C	+60 °C	-20 °C
T5 … T1	+60 °C	+60 °C	--	--	-20 °C	+60 °C	-20 °C	-20 °C	+60 °C	-20 °C

	Stainless steel housing (precision casting) - Antenna in Zone 0 and housing in Zone 0									
	Tp - **P1** - *Ta*		*Tp* - **P2** - *Ta*		*Tp* - **P3** - *Ta*		*Tp* - **P4** - *Ta*		*Tp* - **P5** - *Ta*	
T6	+60 °C	+43 °C	--	--	-20 °C	+57 °C	-20 °C	-20 °C	+60 °C	-20 °C
T5 … T1	+60 °C	+60 °C	--	--	-20 °C	+60 °C	-20 °C	-20 °C	+60 °C	-20 °C

	Stainless steel housing (electropolished) - Antenna in Zone 0 and housing in Zone 0									
	Tp - **P1** - *Ta*		*Tp* - **P2** - *Ta*		*Tp* - **P3** - *Ta*		*Tp* - **P4** - *Ta*		*Tp* - **P5** - *Ta*	
T6	+60 °C	+43 °C	--	--	-20 °C	+60 °C	-20 °C	-20 °C	+60 °C	-20 °C
T5 … T1	+60 °C	+60 °C	--	--	-20 °C	+60 °C	-20 °C	-20 °C	+60 °C	-20 °C

	Plastic housing - Antenna in Zone 0 and housing in Zone 0									
	Tp - **P1** - *Ta*		*Tp* - **P2** - *Ta*		*Tp* - **P3** - *Ta*		*Tp* - **P4** - *Ta*		*Tp* - **P5** - *Ta*	
T6	+60 °C	+44 °C	--	--	-20 °C	+54 °C	-20 °C	-20 °C	+60 °C	-20 °C
T5 … T1	+60 °C	+60 °C	--	--	-20 °C	+60 °C	-20 °C	-20 °C	+60 °C	-20 °C

Category 1/2G (EPL Ga/Gb instruments)

For applications requiring instruments of category EPL Ga the process pressure of the media must be between 0.8 … 1.1 bar. If the VEGAPULS 64 are operated at temperatures higher than those specified in the below 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 below table. It must be taken in mind that the sensor shows no own heating in case of failure and that the safe operation of the plant in regards to pressures/temperatures of the used substances falls to the operator.

The prerequisites for operation in the absence of explosive mixtures can be found in the manufacturer specifications.

	Aluminium housing - Antenna in Zone 0 and housing in Zone 1									
	Tp - **P1** - *Ta*		*Tp* - **P2** - *Ta*		*Tp* - **P3** - *Ta*		*Tp* - **P4** - *Ta*		*Tp* - **P5** - *Ta*	
T6	+60 °C	+40 °C	--	--	-20 °C	+56 °C	-20 °C	-40 °C	+60 °C	-40 °C
T5	+60 °C	+58 °C	--	--	-20 °C	+73 °C	-20 °C	-40 °C	+60 °C	-40 °C
T4 … T1	+60 °C	+80 °C	--	--	-20 °C	+80 °C	-20 °C	-40 °C	+60 °C	-40 °C

	Stainless steel housing (precision casting) - Antenna in Zone 0 and housing in Zone 1									
	Tp - **P1** - *Ta*		*Tp* - **P2** - *Ta*		*Tp* - **P3** - *Ta*		*Tp* - **P4** - *Ta*		*Tp* - **P5** - *Ta*	
T6	+60 °C	+39 °C	--	--	-20 °C	+57 °C	-20 °C	-40 °C	+60 °C	-40 °C
T5	+60 °C	+57 °C	--	--	-20 °C	+75 °C	-20 °C	-40 °C	+60 °C	-40 °C
T4 … T1	+60 °C	+80 °C	--	--	-20 °C	+80 °C	-20 °C	-40 °C	+60 °C	-40 °C

	Stainless steel housing (electropolished) - Antenna in Zone 0 and housing in Zone 1									
	Tp - **P1** - *Ta*		*Tp* - **P2** - *Ta*		*Tp* - **P3** - *Ta*		*Tp* - **P4** - *Ta*		*Tp* - **P5** - *Ta*	
T6	+60 °C	+38 °C	--	--	-20 °C	+60 °C	-20 °C	-40 °C	+60 °C	-40 °C
T5	+60 °C	+56 °C	--	--	-20 °C	+78 °C	-20 °C	-40 °C	+60 °C	-40 °C
T4 … T1	+60 °C	+80 °C	--	--	-20 °C	+80 °C	-20 °C	-40 °C	+60 °C	-40 °C

	Plastic housing - Antenna in Zone 0 and housing in Zone 1									
	Tp - **P1** - *Ta*		*Tp* - **P2** - *Ta*		*Tp* - **P3** - *Ta*		*Tp* - **P4** - *Ta*		*Tp* - **P5** - *Ta*	
T6	+60 °C	+41 °C	--	--	-20 °C	+54 °C	-20 °C	-40 °C	+60 °C	-40 °C
T5	+60 °C	+58 °C	--	--	-20 °C	+71 °C	-20 °C	-40 °C	+60 °C	-40 °C
T4 … T1	+60 °C	+80 °C	--	--	-20 °C	+80 °C	-20 °C	-40 °C	+60 °C	-40 °C

Category 2G (EPL Gb instruments)

The max. permissible temperature on the electronics/housing and the sensors must not exceed the values according to the below tables.

Please make sure that the sensor also in case of failure does not generate heat itself. Responsibility for safe operation of the equipment, with respect to pressures/temperatures of the materials used, rests with the operator.

The prerequisites for operation in the absence of explosive mixtures can be found in the manufacturer specifications.

	Aluminium housing - Antenna in Zone 1 and housing in Zone 1									
	Tp - **P1** - *Ta*		*Tp* - **P2** - *Ta*		*Tp* - **P3** - *Ta*		*Tp* - **P4** - *Ta*		*Tp* - **P5** - *Ta*	
T6	+80 °C	+40 °C	--	--	-40 °C	+59 °C	-40 °C	-40 °C	+80 °C	-40 °C
T5	+80 °C	+58 °C	--	--	-40 °C	+76 °C	-40 °C	-40 °C	+80 °C	-40 °C
T4 … T1	+80 °C	+80 °C	--	--	-40 °C	+80 °C	-40 °C	-40 °C	+80 °C	-40 °C

	Stainless steel housing (precision casting) - Antenna in Zone 1 and housing in Zone 1									
	Tp - **P1** - *Ta*		*Tp* - **P2** - *Ta*		*Tp* - **P3** - *Ta*		*Tp* - **P4** - *Ta*		*Tp* - **P5** - *Ta*	
T6	+80 °C	+39 °C	--	--	-40 °C	+61 °C	-40 °C	-40 °C	+80 °C	-40 °C
T5	+80 °C	+57 °C	--	--	-40 °C	+79 °C	-40 °C	-40 °C	+80 °C	-40 °C
T4 … T1	+80 °C	+80 °C	--	--	-40 °C	+80 °C	-40 °C	-40 °C	+80 °C	-40 °C

	Stainless steel housing (electropolished) - Antenna in Zone 1 and housing in Zone 1									
	Tp - **P1** - *Ta*		*Tp* - **P2** - *Ta*		*Tp* - **P3** - *Ta*		*Tp* - **P4** - *Ta*		*Tp* - **P5** - *Ta*	
T6	+80 °C	+38 °C	--	--	-40 °C	+64 °C	-40 °C	-40 °C	+80 °C	-40 °C
T5	+80 °C	+56 °C	-30 °C	+80 °C	-40 °C	+80 °C	-40 °C	-40 °C	+80 °C	-40 °C
T4 … T1	+80 °C	+80 °C	--	--	-40 °C	+80 °C	-40 °C	-40 °C	+80 °C	-40 °C

	Plastic housing - Antenna in Zone 1 and housing in Zone 1									
	Tp - **P1** - *Ta*		*Tp* - **P2** - *Ta*		*Tp* - **P3** - *Ta*		*Tp* - **P4** - *Ta*		*Tp* - **P5** - *Ta*	
T6	+80 °C	+41 °C	--	--	-40 °C	+56 °C	-40 °C	-40 °C	+80 °C	-40 °C
T5	+80 °C	+58 °C	--	--	-40 °C	+73 °C	-40 °C	-40 °C	+80 °C	-40 °C

	Plastic housing - Antenna in Zone 1 and housing in Zone 1									
	Tp - **P1** - *Ta*		*Tp* - **P2** - *Ta*		*Tp* - **P3** - *Ta*		*Tp* - **P4** - *Ta*		*Tp* - **P5** - *Ta*	
T4 … T1	+80 °C	+80 °C	--	--	-40 °C	+80 °C	-40 °C	-40 °C	+80 °C	-40 °C

T-class - VEGAPULS 64 for process temperatures up to +130 °C
The following temperature tables are valid for:

VEGAPULS PS64(*).T/U**A/G/F/RH******(*)(*)**

VEGAPULS PS64(*).F/G**I/K/PH******(*)(*)**

VEGAPULS PS64(*).H/I**T/U/VH******(*)(*)**

VEGAPULS PS64(*).H/I**IH******(*)(*)**

If then the VEGAPULS 64 is mentioned, it is valid for the above listed versions of VEGAPULS 64.

Category 1G (EPL Ga instruments)
For applications requiring instruments of category 1G, the process pressure of the media must be between 0.8 … 1.1 bar.

The prerequisites for operation in the absence of explosive mixtures can be found in the manufacturer specifications.

	Aluminium housing - Antenna in Zone 0 and housing in Zone 0									
	Tp - **P1** - *Ta*		*Tp* - **P2** - *Ta*		*Tp* - **P3** - *Ta*		*Tp* - **P4** - *Ta*		*Tp* - **P5** - *Ta*	
T6	+60 °C	+40 °C	--	--	-20 °C	+58 °C	-20 °C	-20 °C	+60 °C	-20 °C
T5 … T1	+60 °C	+60 °C	--	--	-20 °C	+60 °C	-20 °C	-20 °C	+60 °C	-20 °C

	Stainless steel housing (precision casting) - Antenna in Zone 0 and housing in Zone 0									
	Tp - **P1** - *Ta*		*Tp* - **P2** - *Ta*		*Tp* - **P3** - *Ta*		*Tp* - **P4** - *Ta*		*Tp* - **P5** - *Ta*	
T6	+60 °C	+39 °C	--	--	-20 °C	+60 °C	-20 °C	-20 °C	+60 °C	-20 °C
T5 … T1	+60 °C	+60 °C	--	--	-20 °C	+60 °C	-20 °C	-20 °C	+60 °C	-20 °C

	Stainless steel housing (electropolished) - Antenna in Zone 0 and housing in Zone 0									
	Tp - **P1** - *Ta*		*Tp* - **P2** - *Ta*		*Tp* - **P3** - *Ta*		*Tp* - **P4** - *Ta*		*Tp* - **P5** - *Ta*	
T6	+60 °C	+39 °C	--	--	-20 °C	+60 °C	-20 °C	-20 °C	+60 °C	-20 °C
T5 … T1	+60 °C	+60 °C	--	--	-20 °C	+60 °C	-20 °C	-20 °C	+60 °C	-20 °C

	Plastic housing - Antenna in Zone 0 and housing in Zone 0									
	Tp - **P1** - *Ta*		*Tp* - **P2** - *Ta*		*Tp* - **P3** - *Ta*		*Tp* - **P4** - *Ta*		*Tp* - **P5** - *Ta*	
T6	+60 °C	+43 °C	--	--	-20 °C	+55 °C	-20 °C	-20 °C	+60 °C	-20 °C
T5 … T1	+60 °C	+60 °C	--	--	-20 °C	+60 °C	-20 °C	-20 °C	+60 °C	-20 °C

Category 1/2G (EPL Ga/Gb instruments)
For applications requiring instruments of category EPL Ga the process pressure of the media must be between 0.8 … 1.1 bar. If the VEGAPULS 64 are operated at temperatures higher than those specified in the below 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 below table. It must be taken in mind that the sensor shows no own heating in case of failure and that the safe operation of the plant in regards to pressures/temperatures of the used substances falls to the operator.

The prerequisites for operation in the absence of explosive mixtures can be found in the manufacturer specifications.

	Aluminium housing - Antenna in Zone 0 and housing in Zone 1									
	Tp - **P1** - *Ta*		*Tp* - **P2** - *Ta*		*Tp* - **P3** - *Ta*		*Tp* - **P4** - *Ta*		*Tp* - **P5** - *Ta*	
T6	+60 °C	+32 °C	--	--	-20 °C	+58 °C	-20 °C	-40 °C	+60 °C	-40 °C
T5	+60 °C	+47 °C	--	--	-20 °C	+72 °C	-20 °C	-40 °C	+60 °C	-40 °C
T4 … T1	+60 °C	+57 °C	--	--	-20 °C	+80 °C	-20 °C	-40 °C	+60 °C	-40 °C

	Stainless steel housing (precision casting) - Antenna in Zone 0 and housing in Zone 1									
	Tp - **P1** - *Ta*		*Tp* - **P2** - *Ta*		*Tp* - **P3** - *Ta*		*Tp* - **P4** - *Ta*		*Tp* - **P5** - *Ta*	
T6	+60 °C	+30 °C	--	--	-20 °C	+60 °C	-20 °C	-20 °C	+60 °C	-20 °C
T5	+60 °C	+45 °C	--	--	-20 °C	+78 °C	-20 °C	-20 °C	+60 °C	-20 °C
T4 … T1	+60 °C	+47 °C	--	--	-20 °C	+80 °C	-20 °C	-40 °C	+60 °C	-40 °C

	Stainless steel housing (electropolished) - Antenna in Zone 0 and housing in Zone 1									
	Tp - **P1** - *Ta*		*Tp* - **P2** - *Ta*		*Tp* - **P3** - *Ta*		*Tp* - **P4** - *Ta*		*Tp* - **P5** - *Ta*	
T6	+60 °C	+29 °C	--	--	-20 °C	+60 °C	-20 °C	-40 °C	+60 °C	-40 °C
T5	+60 °C	+44 °C	-5 °C	+80 °C	-20 °C	+80 °C	-20 °C	-40 °C	+60 °C	-40 °C
T4 … T1	+60 °C	+36 °C	--	--	-20 °C	+80 °C	-20 °C	-40 °C	+60 °C	-40 °C

	Plastic housing - Antenna in Zone 0 and housing in Zone 1									
	Tp - **P1** - *Ta*		*Tp* - **P2** - *Ta*		*Tp* - **P3** - *Ta*		*Tp* - **P4** - *Ta*		*Tp* - **P5** - *Ta*	
T6	+60 °C	+39 °C	--	--	-20 °C	+55 °C	-20 °C	-40 °C	+60 °C	-40 °C
T5	+60 °C	+54 °C	--	--	-20 °C	+72 °C	-20 °C	-40 °C	+60 °C	-40 °C
T4 … T1	+60 °C	+46 °C	--	--	-20 °C	+80 °C	-20 °C	-40 °C	+60 °C	-40 °C

Category 2G (EPL Gb instruments)

The max. permissible temperature on the electronics/housing and the sensors must hence not exceed the values according to the below tables.

Please make sure that the sensor also in case of failure does not generate heat itself. Responsibility for safe operation of the equipment, with respect to pressures/temperatures of the materials used, rests with the operator.

The prerequisites for operation in the absence of explosive mixtures can be found in the manufacturer specifications.

	Aluminium housing - Antenna in Zone 1 and housing in Zone 1									
	Tp - **P1** - *Ta*		*Tp* - **P2** - *Ta*		*Tp* - **P3** - *Ta*		*Tp* - **P4** - *Ta*		*Tp* - **P5** - *Ta*	
T6	+80 °C	+32 °C	--	--	-40 °C	+61 °C	-40 °C	-40 °C	+80 °C	-40 °C
T5	+95 °C	+47 °C	--	--	-40 °C	+79 °C	-40 °C	-40 °C	+95 °C	-40 °C
T4 … T1	+130 °C	+57 °C	+80 °C	+80 °C	-40 °C	+80 °C	-40 °C	-40 °C	+130 °C	-40 °C

	Stainless steel housing (precision casting) - Antenna in Zone 1 and housing in Zone 1									
	Tp - **P1** - *Ta*		*Tp* - **P2** - *Ta*		*Tp* - **P3** - *Ta*		*Tp* - **P4** - *Ta*		*Tp* - **P5** - *Ta*	
T6	+80 °C	+30 °C	--	--	-40 °C	+64 °C	-40 °C	-40 °C	+80 °C	-40 °C
T5	+95 °C	+45 °C	-30 °C	+80 °C	-40 °C	+80 °C	-40 °C	-40 °C	+95 °C	-40 °C
T4 … T1	+130 °C	+47 °C	+80 °C	+80 °C	-40 °C	+80 °C	-40 °C	-40 °C	+130 °C	-40 °C

	Stainless steel housing (electropolished) - Antenna in Zone 1 and housing in Zone 1									
	Tp - **P1** - *Ta*		*Tp* - **P2** - *Ta*		*Tp* - **P3** - *Ta*		*Tp* - **P4** - *Ta*		*Tp* - **P5** - *Ta*	
T6	+80 °C	+29 °C	--	--	-40 °C	+71 °C	-40 °C	-40 °C	+80 °C	-40 °C
T5	+95 °C	+44 °C	-5 °C	+80 °C	-40 °C	+80 °C	-40 °C	-40 °C	+95 °C	-40 °C
T4 … T1	+130 °C	+36 °C	+80 °C	+80 °C	-40 °C	+80 °C	-40 °C	-40 °C	+130 °C	-40 °C

	Plastic housing - Antenna in Zone 1 and housing in Zone 1									
	Tp - **P1** - *Ta*		*Tp* - **P2** - *Ta*		*Tp* - **P3** - *Ta*		*Tp* - **P4** - *Ta*		*Tp* - **P5** - *Ta*	
T6	+80 °C	+39 °C	--	--	-40 °C	+58 °C	-40 °C	-40 °C	+80 °C	-40 °C
T5	+95 °C	+54 °C	--	--	-40 °C	+75 °C	-40 °C	-40 °C	+95 °C	-40 °C
T4 … T1	+130 °C	+46 °C	+80 °C	+80 °C	-40 °C	+80 °C	-40 °C	-40 °C	+130 °C	-40 °C

T-class - VEGAPULS 64 for process temperatures up to +195 °C
The following temperature tables are valid for:

VEGAPULS PS64(*).T/U**B/H/SH******(*)(*)**

VEGAPULS PS64(*).F/G**J/W/L/Y/QH******(*)(*)**

VEGAPULS PS64(*).H/I**JH******(*)(*)**

If then the VEGAPULS 64 is mentioned, it is valid for the above listed versions of VEGAPULS 64.

Category 1G (EPL Ga instruments)
For applications requiring instruments of category 1G, the process pressure of the media must be between 0.8 … 1.1 bar.

The prerequisites for operation in the absence of explosive mixtures can be found in the manufacturer specifications.

	Aluminium housing - Antenna in Zone 0 and housing in Zone 0									
	Tp - **P1** - *Ta*		*Tp* - **P2** - *Ta*		*Tp* - **P3** - *Ta*		*Tp* - **P4** - *Ta*		*Tp* - **P5** - *Ta*	
T6	+60 °C	+44 °C	--	--	-20 °C	+51 °C	-20 °C	-20 °C	+60 °C	-20 °C
T5 … T1	+60 °C	+60 °C	--	--	-20 °C	+60 °C	-20 °C	-20 °C	+60 °C	-20 °C

	Stainless steel housing (precision casting) - Antenna in Zone 0 and housing in Zone 0									
	Tp - **P1** - *Ta*		*Tp* - **P2** - *Ta*		*Tp* - **P3** - *Ta*		*Tp* - **P4** - *Ta*		*Tp* - **P5** - *Ta*	
T6	+60 °C	+44 °C	--	--	-20 °C	+53 °C	-20 °C	-20 °C	+60 °C	-20 °C
T5 … T1	+60 °C	+60 °C	--	--	-20 °C	+60 °C	-20 °C	-20 °C	+60 °C	-20 °C

	Stainless steel housing (electropolished) - Antenna in Zone 0 and housing in Zone 0									
	Tp - **P1** - *Ta*		*Tp* - **P2** - *Ta*		*Tp* - **P3** - *Ta*		*Tp* - **P4** - *Ta*		*Tp* - **P5** - *Ta*	
T6	+60 °C	+43 °C	--	--	-20 °C	+55 °C	-20 °C	-20 °C	+60 °C	-20 °C
T5 … T1	+60 °C	+60 °C	--	--	-20 °C	+60 °C	-20 °C	-20 °C	+60 °C	-20 °C

	Plastic housing - Antenna in Zone 0 and housing in Zone 0									
	Tp - **P1** - *Ta*		*Tp* - **P2** - *Ta*		*Tp* - **P3** - *Ta*		*Tp* - **P4** - *Ta*		*Tp* - **P5** - *Ta*	
T6	+60 °C	+45 °C	--	--	-20 °C	+50 °C	-20 °C	-20 °C	+60 °C	-20 °C
T5 … T1	+60 °C	+60 °C	--	--	-20 °C	+60 °C	-20 °C	-20 °C	+60 °C	-20 °C

Category 1/2G (EPL Ga/Gb instruments)

For applications requiring instruments of category EPL Ga the process pressure of the media must be between 0.8 … 1.1 bar. If the VEGAPULS 64 are operated at temperatures higher than those specified in the below 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 below table. It must be taken in mind that the sensor shows no own heating in case of failure and that the safe operation of the plant in regards to pressures/temperatures of the used substances falls to the operator.

The prerequisites for operation in the absence of explosive mixtures can be found in the manufacturer specifications.

	Aluminium housing - Antenna in Zone 0 and housing in Zone 1									
	Tp - **P1** - *Ta*		*Tp* - **P2** - *Ta*		*Tp* - **P3** - *Ta*		*Tp* - **P4** - *Ta*		*Tp* - **P5** - *Ta*	
T6	+60 °C	+42 °C	--	--	-20 °C	+51 °C	-20 °C	-40 °C	+60 °C	-40 °C
T5	+60 °C	+57 °C	--	--	-20 °C	+68 °C	-20 °C	-40 °C	+60 °C	-40 °C
T4	+60 °C	+73 °C	--	--	-20 °C	+80 °C	-20 °C	-40 °C	+60 °C	-40 °C
T3 … T1	+60 °C	+65 °C	--	--	-20 °C	+80 °C	-20 °C	-40 °C	+60 °C	-40 °C

	Stainless steel housing (precision casting) - Antenna in Zone 0 and housing in Zone 1									
	Tp - **P1** - *Ta*		*Tp* - **P2** - *Ta*		*Tp* - **P3** - *Ta*		*Tp* - **P4** - *Ta*		*Tp* - **P5** - *Ta*	
T6	+60 °C	+41 °C	--	--	-20 °C	+53 °C	-20 °C	-20 °C	+60 °C	-20 °C
T5	+60 °C	+56 °C	--	--	-20 °C	+70 °C	-20 °C	-20 °C	+60 °C	-20 °C
T4	+60 °C	+70 °C	--	--	-20 °C	+80 °C	-20 °C	-40 °C	+60 °C	-40 °C
T3 … T1	+60 °C	+57 °C	--	--	-20 °C	+80 °C	-20 °C	-40 °C	+60 °C	-40 °C

	Stainless steel housing (electropolished) - Antenna in Zone 0 and housing in Zone 1									
	Tp - **P1** - *Ta*		*Tp* - **P2** - *Ta*		*Tp* - **P3** - *Ta*		*Tp* - **P4** - *Ta*		*Tp* - **P5** - *Ta*	
T6	+60 °C	+40 °C	--	--	-20 °C	+55 °C	-20 °C	-40 °C	+60 °C	-40 °C
T5	+60 °C	+55 °C	--	--	-20 °C	+72 °C	-20 °C	-40 °C	+60 °C	-40 °C
T4	+60 °C	+66 °C	--	--	-20 °C	+80 °C	-20 °C	-40 °C	+60 °C	-40 °C
T3 … T1	+60 °C	+49 °C	--	--	-20 °C	+80 °C	-20 °C	-40 °C	+60 °C	-40 °C

	Plastic housing - Antenna in Zone 0 and housing in Zone 1									
	Tp - **P1** - *Ta*		*Tp* - **P2** - *Ta*		*Tp* - **P3** - *Ta*		*Tp* - **P4** - *Ta*		*Tp* - **P5** - *Ta*	
T6	+60 °C	+43 °C	--	--	-20 °C	+50 °C	-20 °C	-40 °C	+60 °C	-40 °C
T5	+60 °C	+58 °C	--	--	-20 °C	+66 °C	-20 °C	-40 °C	+60 °C	-40 °C
T4	+60 °C	+68 °C	--	--	-20 °C	+80 °C	-20 °C	-40 °C	+60 °C	-40 °C
T3 … T1	+60 °C	+54 °C	--	--	-20 °C	+80 °C	-20 °C	-40 °C	+60 °C	-40 °C

Category 2G (EPL Gb instruments)

The max. permissible temperature on the electronics/housing and the sensors must hence not exceed the values according to the below tables.

Please make sure that the sensor also in case of failure does not generate heat itself. Responsibility for safe operation of the equipment, with respect to pressures/temperatures of the materials used, rests with the operator.

The prerequisites for operation in the absence of explosive mixtures can be found in the manufacturer specifications.

	Aluminium housing - Antenna in Zone 1 and housing in Zone 1									
	Tp - **P1** - *Ta*		*Tp* - **P2** - *Ta*		*Tp* - **P3** - *Ta*		*Tp* - **P4** - *Ta*		*Tp* - **P5** - *Ta*	
T6	+80 °C	+42 °C	--	--	-40 °C	+53 °C	-40 °C	-40 °C	+80 °C	-40 °C
T5	+95 °C	+57 °C	--	--	-40 °C	+69 °C	-40 °C	-40 °C	+95 °C	-40 °C
T4	+130 °C	+73 °C	+80 °C	+80 °C	-40 °C	+80 °C	-40 °C	-40 °C	+135 °C	-40 °C
T3 … T1	+195 °C	+65 °C	+80 °C	+80 °C	-40 °C	+80 °C	-40 °C	-40 °C	+195 °C	-40 °C

	Stainless steel housing (precision casting) - Antenna in Zone 1 and housing in Zone 1									
	Tp - **P1** - *Ta*		*Tp* - **P2** - *Ta*		*Tp* - **P3** - *Ta*		*Tp* - **P4** - *Ta*		*Tp* - **P5** - *Ta*	
T6	+80 °C	+41 °C	--	--	-40 °C	+55 °C	-40 °C	-40 °C	+80 °C	-40 °C
T5	+95 °C	+56 °C	--	--	-40 °C	+71 °C	-40 °C	-40 °C	+95 °C	-40 °C
T4	+130 °C	+70 °C	+80 °C	+80 °C	-40 °C	+80 °C	-40 °C	-40 °C	+130 °C	-40 °C
T3 … T1	+195 °C	+57 °C	+80 °C	+80 °C	-40 °C	+80 °C	-40 °C	-40 °C	+195 °C	-40 °C

	Stainless steel housing (electropolished) - Antenna in Zone 1 and housing in Zone 1									
	Tp - **P1** - *Ta*		*Tp* - **P2** - *Ta*		*Tp* - **P3** - *Ta*		*Tp* - **P4** - *Ta*		*Tp* - **P5** - *Ta*	
T6	+80 °C	+40 °C	--	--	-40 °C	+58 °C	-40 °C	-40 °C	+80 °C	-40 °C
T5	+95 °C	+55 °C	--	--	-40 °C	+75 °C	-40 °C	-40 °C	+95 °C	-40 °C
T4	+130 °C	+66 °C	+80 °C	+80 °C	-40 °C	+80 °C	-40 °C	-40 °C	+130 °C	-40 °C
T3 … T1	+195 °C	+49 °C	+80 °C	+80 °C	-40 °C	+80 °C	-40 °C	-40 °C	+195 °C	-40 °C

	Plastic housing - Antenna in Zone 1 and housing in Zone 1									
	Tp - **P1** - *Ta*		*Tp* - **P2** - *Ta*		*Tp* - **P3** - *Ta*		*Tp* - **P4** - *Ta*		*Tp* - **P5** - *Ta*	
T6	+80 °C	+43 °C	--	--	-40 °C	+51 °C	-40 °C	-40 °C	+80 °C	-40 °C
T5	+95 °C	+58 °C	--	--	-40 °C	+67 °C	-40 °C	-40 °C	+95 °C	-40 °C
T4	+130 °C	+68 °C	+80 °C	+80 °C	-40 °C	+80 °C	-40 °C	-40 °C	+130 °C	-40 °C

	Plastic housing - Antenna in Zone 1 and housing in Zone 1									
	Tp - **P1** - *Ta*		*Tp* - **P2** - *Ta*		*Tp* - **P3** - *Ta*		*Tp* - **P4** - *Ta*		*Tp* - **P5** - *Ta*	
T3 … T1	+195 °C	+54 °C	+80 °C	+80 °C	-40 °C	+80 °C	-40 °C	-40 °C	+195 °C	-40 °C

T-class - VEGAPULS 64 for low process temperatures up to -196 °C
The following temperature tables are valid for:

VEGAPULS PS64(*).F/G**W/YH******(*)(*)**

If then the VEGAPULS 64 is mentioned, it is valid for the above listed versions of VEGAPULS 64.

Only the antenna/the process fitting of VEGAPULS 64 is exposed to process temperatures Tp of up to -196 °C. The housing is exposed to the max. ambient temperature Ta.

Category 2G (EPL Gb instruments)
The max. permissible temperature on the electronics/housing and the sensors must hence not exceed the values according to the below tables.

Please make sure that the sensor also in case of failure does not generate heat itself. Responsibility for safe operation of the equipment, with respect to pressures/temperatures of the materials used, rests with the operator.

The prerequisites for operation in the absence of explosive mixtures can be found in the manufacturer specifications.

	Aluminium housing - Antenna in Zone 1 and housing in Zone 1											
	Tp - **P1** - *Ta*		*Tp* - **P2** - *Ta*		*Tp* - **P3'** - *Ta*		*Tp* - **P4'** - *Ta*		*Tp* - **P4** - *Ta*		*Tp* - **P5** - *Ta*	
T6	+80 °C	+42 °C	-40 °C	+53 °C	-196 °C	+53 °C	-196 °C	-10 °C	-40 °C	-40 °C	+80 °C	-40 °C
T5	+95 °C	+57 °C	-40 °C	+69 °C	-196 °C	+69 °C	-196 °C	-10 °C	-40 °C	-40 °C	+95 °C	-40 °C
T4	+130 °C	+74 °C	+80 °C	+80 °C	-196 °C	+80 °C	-196 °C	-10 °C	-40 °C	-40 °C	+130 °C	-40 °C
T3, T2, T1	+195 °C	+67 °C	+80 °C	+80 °C	-196 °C	+80 °C	-196 °C	-10 °C	-40 °C	-40 °C	+195 °C	-40 °C

	Stainless steel housing (precision casting) - Antenna in Zone 1 and housing in Zone 1											
	Tp - **P1** - *Ta*		*Tp* - **P2** - *Ta*		*Tp* - **P3'** - *Ta*		*Tp* - **P4'** - *Ta*		*Tp* - **P4** - *Ta*		*Tp* - **P5** - *Ta*	
T6	+80 °C	+42 °C	-40 °C	+55 °C	-196 °C	+55 °C	-196 °C	-10 °C	-40 °C	-40 °C	+80 °C	-40 °C
T5	+95 °C	+57 °C	-40 °C	+71 °C	-196 °C	+71 °C	-196 °C	-10 °C	-40 °C	-40 °C	+95 °C	-40 °C
T4	+130 °C	+71 °C	+80 °C	+80 °C	-196 °C	+80 °C	-196 °C	-10 °C	-40 °C	-40 °C	+130 °C	-40 °C
T3, T2, T1	+195 °C	+60 °C	+80 °C	+80 °C	-196 °C	+80 °C	-196 °C	-10 °C	-40 °C	-40 °C	+195 °C	-40 °C

	Stainless steel housing (electropolished) - Antenna in Zone 1 and housing in Zone 1											
	Tp - **P1** - *Ta*		*Tp* - **P2** - *Ta*		*Tp* - **P3'** - *Ta*		*Tp* - **P4'** - *Ta*		*Tp* - **P4** - *Ta*		*Tp* - **P5** - *Ta*	
T6	+80 °C	+41 °C	-40 °C	+58 °C	-196 °C	+58 °C	-196 °C	-10 °C	-40 °C	-40 °C	+80 °C	-40 °C

	Stainless steel housing (electropolished) - Antenna in Zone 1 and housing in Zone 1											
	Tp - **P1** - *Ta*		*Tp* - **P2** - *Ta*		*Tp* - **P3'** - *Ta*		*Tp* - **P4'** - *Ta*		*Tp* - **P4** - *Ta*		*Tp* - **P5** - *Ta*	
T5	+95 °C	+56 °C	-40 °C	+75 °C	-196 °C	+75 °C	-196 °C	-10 °C	-40 °C	-40 °C	+95 °C	-40 °C
T4	+130 °C	+68 °C	+80 °C	+80 °C	-196 °C	+80 °C	-196 °C	-10 °C	-40 °C	-40 °C	+130 °C	-40 °C
T3, T2, T1	+195 °C	+53 °C	+80 °C	+80 °C	-196 °C	+80 °C	-196 °C	-10 °C	-40 °C	-40 °C	+195 °C	-40 °C

	Plastic housing - Antenna in Zone 1 and housing in Zone 1											
	Tp - **P1** - *Ta*		*Tp* - **P2** - *Ta*		*Tp* - **P3'** - *Ta*		*Tp* - **P4'** - *Ta*		*Tp* - **P4** - *Ta*		*Tp* - **P5** - *Ta*	
T6	+80 °C	+43 °C	-40 °C	+51 °C	-196 °C	+51 °C	-196 °C	-10 °C	-40 °C	-40 °C	+80 °C	-40 °C
T5	+95 °C	+58 °C	-40 °C	+67 °C	-196 °C	+67 °C	-196 °C	-10 °C	-40 °C	-40 °C	+95 °C	-40 °C
T4	+130 °C	+70 °C	+80 °C	+80 °C	-196 °C	+80 °C	-196 °C	-10 °C	-40 °C	-40 °C	+130 °C	-40 °C
T3, T2, T1	+195 °C	+58 °C	+80 °C	+80 °C	-196 °C	+80 °C	-196 °C	-10 °C	-40 °C	-40 °C	+195 °C	-40 °C

Confirmation

Hereby the company VEGA Grieshaber KG declares that the approved CCOE devices have been manufactured in accordance with the ATEX approval mentioned in the attached CCOE certificate.

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