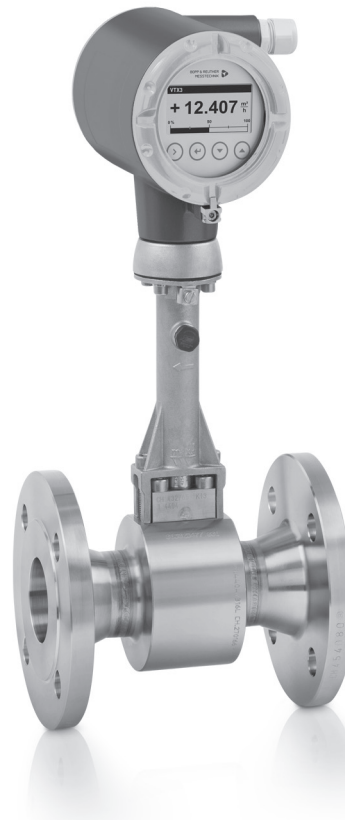




VTX3 Supplementary Instructions



Vortex flowmeter

Equipment category II 2 G, EPL Gb
in protection type intrinsic safety "i"



1	Safety instructions	3
1.1	General notes	3
1.2	EU conformity	3
1.3	Safety instructions.....	3
2	Device description	4
2.1	Device description	4
2.2	Type code	4
2.3	Marking	5
2.4	Flammable products	7
2.5	Equipment category	7
2.6	Types of protection	8
2.7	Ambient temperature / temperature classes.....	8
2.8	Electrical data.....	16
3	Installation	17
3.1	Mounting	17
3.2	Special conditions.....	18
4	Electrical connections	19
4.1	General notes	19
4.2	Power supply	19
4.3	Inputs / Outputs	20
4.4	Grounding and equipotential bonding.....	20
4.5	Flow sensor circuits (remote version only)	22
5	Operation	23
5.1	Start-up.....	23
5.2	Operation	23
5.3	Electrostatic charge	23
6	Service	24
6.1	Maintenance	24
6.2	Dismantling	24
7	Notes	26

1.1 General notes

This additional instruction applies to explosion-protected versions of vortex flowmeters with protection type intrinsic safety "i", equipment category II 2 G and EPL Gb. It completes the standard manual for the non-explosion protected versions.

The information given in this instruction contains only the data relevant to explosion protection. The technical details given in the manual for the non-explosion protected versions remain unchanged unless they will be excluded or replaced by this instruction.

1.2 EU conformity

The manufacturer declares with the EU declaration of conformity on his own responsibility conformity with the protection goals of directive 2014/34/EU for use in hazardous areas with gas.

The EU declaration of conformity for the equipment category II 2 G is based on the EU type examination certificate of the KIWA ExVision:

KIWA 18 ATEX 0041X

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

1.3 Safety instructions

If these instructions are not followed, there is a risk of explosion.

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

Vortex flowmeters measure and display the flow of flammable and non-flammable gases and liquids. The signal converter includes either a 4...20 mA signal output with optional HART® communication or a bus connection. There are bus connections available according to the FISCO model for connecting to the Foundation Fieldbus or Profibus PA. Signal converters with signal output have a separate binary output and a separate current input.

The VTX3 W remote version consists of the SV18 flow sensor and the KV18 ..i-Ex signal converter.

2.2 Type code

The safety description code consists of the following elements*:

VTX	3	K	..	i-Ex
①	②	③	④	⑤ ⑥

Figure 2-1: Safety description code for the compact version

- ① Product designation
- ② Type series
- ③ Compact version
- ④ Electrical signal output
 - free - current output 4...20 mA with optional HART® communication
 - FF - Foundation Fieldbus bus connection
 - PA - Profibus PA bus connection
- ⑤ Intrinsically safe supply
- ⑥ Ex - explosion-protected version

VTX	3	W	..	i	020-Ex
①	②	③	④	⑤	⑥ ⑦

Figure 2-2: Safety description code for the signal converter of the remote version

- ① Product designation
- ② Type series
- ③ Remote version
- ④ Electrical signal output
 - free - current output 4...20 mA with optional HART® communication
 - FF - Foundation Fieldbus bus connection
 - PA - Profibus PA bus connection
- ⑤ Intrinsically safe supply
- ⑥ Sensor electronics VFC 020
- ⑦ Ex - explosion-protected version

SV	18
①	②

Figure 2-3: Safety description code for the flow sensor of the remote version

- ① Product designation
- ② Type series of flow sensor

The remote version consisting of the flow sensor SV 18 and the signal converter KV 18 020 is called the VTX3 W.

2.3 Marking

The marking of the devices in accordance with the description code is shown on the nameplates below. On both the compact devices and the remote versions, the main plate is located on the signal converter housing. On the remote versions there is an additional marking on the flow sensor.

Compact versions with two signal converters for dual measurement (dual version) are each marked with a nameplate, which is attached to each of the signal converter housings. The details relevant to explosion protection are identical on both nameplates.

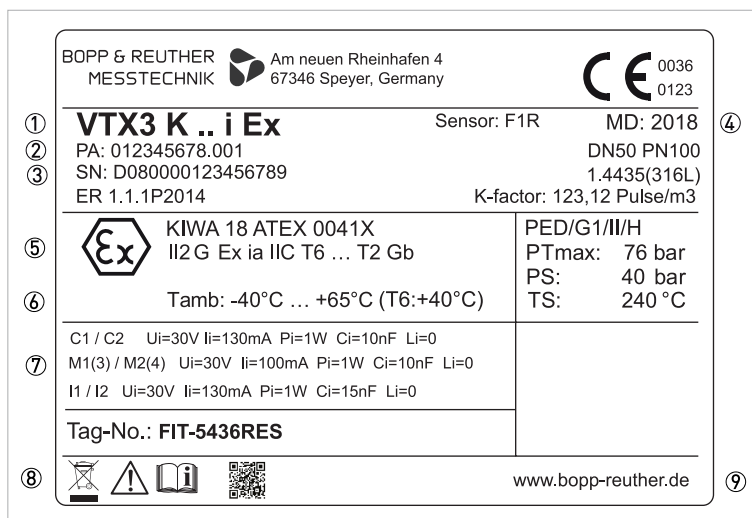


Figure 2-4: Example of a nameplate for the compact version

- ① Device version VTX3 K
- ② Production order number
- ③ Serial number
- ④ Year of manufacture
- ⑤ Ex data according to KIWA 18 ATEX 0041X
- ⑥ Permissible ambient temperature range
- ⑦ Maximum values intrinsically safe circuits
- ⑧ Safety instructions, disposal and data matrix
- ⑨ Internet address of the manufacturer

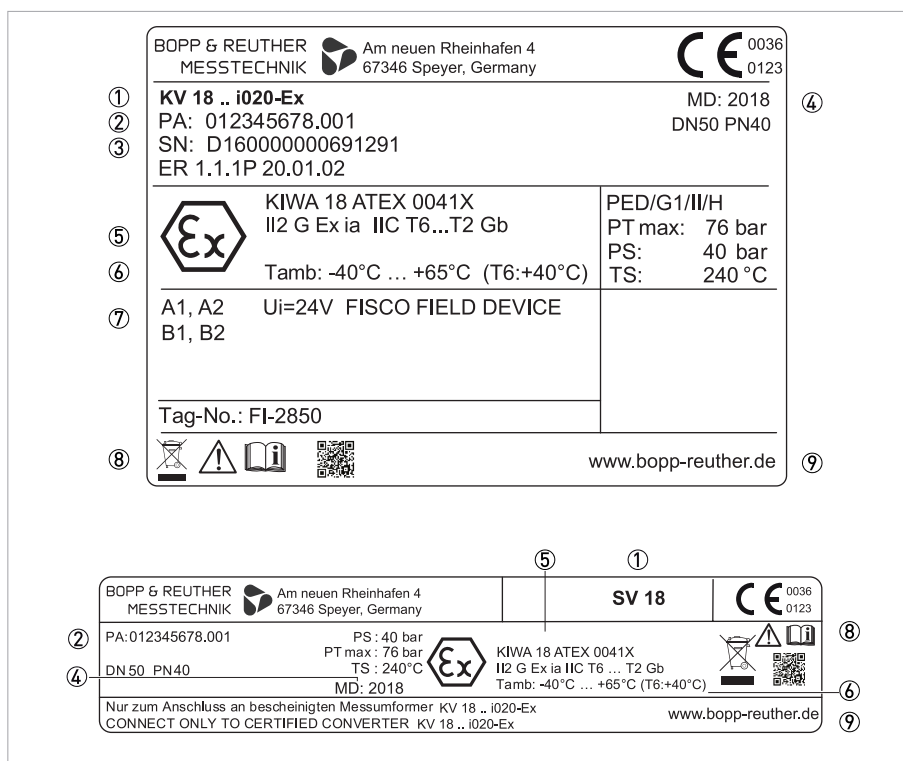


Figure 2-5: Example of the nameplates for the remote version

- ① Device version VTX3 W
- ② Production order number
- ③ Serial number
- ④ Year of manufacture
- ⑤ Ex data according to KIWA 18 ATEX 0041X
- ⑥ Permissible ambient temperature range
- ⑦ Maximum values intrinsically safe circuits
- ⑧ Safety instructions, disposal and data matrix
- ⑨ Internet address of the manufacturer

2.4 Flammable products

Atmospheric conditions:

The standard atmospheric conditions under which it may be assumed that Ex equipment can be operated are:

- Temperature: -20...+60°C / -4...+140°F
- Pressure: 80...110 kPa (0.8...1.1 bar) / 11.6...15.9 psi
- Air with normal oxygen content, typically 21%v/v

Ex equipment operating outside the standard temperature range must be tested and certified (e.g. for ambient temperature range -40...+65°C / -40...+149°F).

Ex equipment operating outside the standard atmospheric pressure range and standard oxygen content is not permitted.

Operating conditions:

Vortex flowmeters operate outside the standard atmospheric pressure range, which means that explosion protection, regardless of the zone assignment, is fundamentally not applicable for the measuring unit (piping).



CAUTION!

Operation with flammable products is only permitted as long as no explosive fuel/air mixture builds up inside of the piping at the same time the atmospheric conditions are exceeded.

The operator is responsible to ensure that the flowmeter is operated safely in terms of the temperature and pressure of the products used. In case of operation with flammable products the measuring units must be included in the periodic pressure tests of the piping.

2.5 Equipment category

Vortex flowmeters are designed in category II 2 G and EPL Gb according to EN 60079-0 and EN 60079-11 for use in zone 1. The inside of the measuring unit is also approved for zone 1.



Definition of zone 1 according to EN 1127-1, Appendix B:

An area in which an explosive atmosphere, as a result of the mixture of flammable substances in the form of gas, steam or mist with air, under normal operation may occasionally occur.

2.6 Types of protection

The marking is:

ATEX **II 2 G Ex ia IIC T6...T2 Gb**
 (compact version, flow sensor in remote version)
 or
 II 2 G Ex ia IIC T6 Gb
 (signal converter in remote version)

The marking contains the following information:	
II	Explosion protection, group II
2	Equipment category 2
G	Gas explosion protection
Ex ia	Intrinsically safe, level of protection "ia"
IIC	Gas group, suitable for gas groups IIC, IIB and IIA
T6...T2	Temperature class range (compact version, flow sensor in remote version)
T6	Temperature class (signal converter in remote version)
Gb	EPL, suitable for zone 1



In principle, operation is possible in all ranges of the temperature classes T1...T6.

2.7 Ambient temperature / temperature classes

Because of the influence of the temperature of the product, no fixed temperature class is assigned to vortex flowmeters. The temperature class of these devices is rather a function of the product temperature and ambient temperature that is present and the specific device version. The classification is outlined in the following tables.

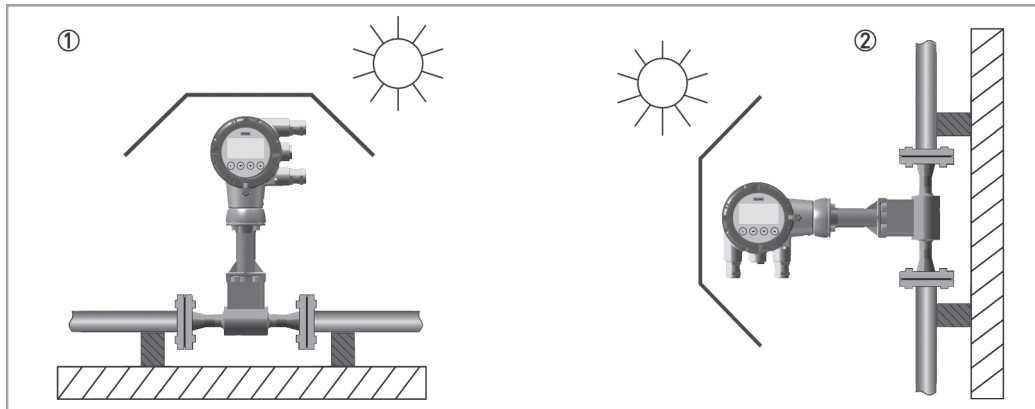
The tables take into account the following parameters:

- Ambient temperature T_{amb}
- Product temperature T_m
- Nominal size DN
- Heat resistance of the connecting cable

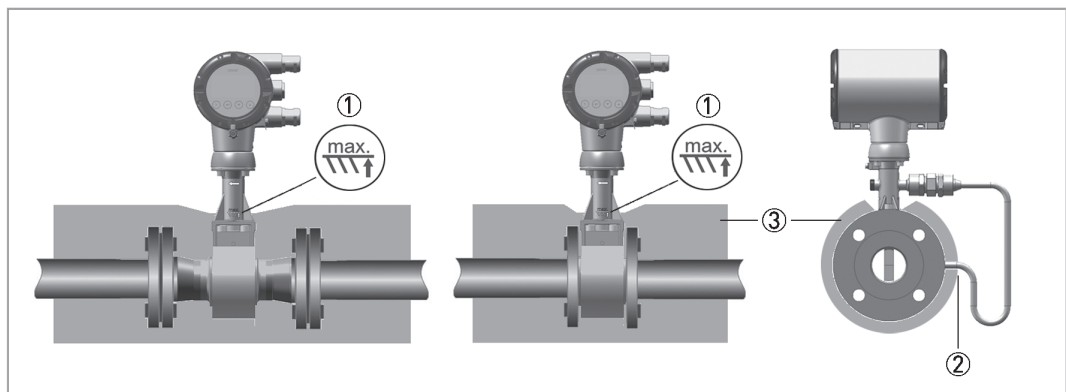


The maximum permissible product temperatures listed in the tables are valid under the following conditions:

- *The measuring device is installed and operated in accordance with the manufacturer's installation instructions.*
- *It must be ensured that the flowmeter is not heated by the effects of additional heat radiation (sunshine, neighbouring system components) and thus operated above the permissible ambient temperature range.*



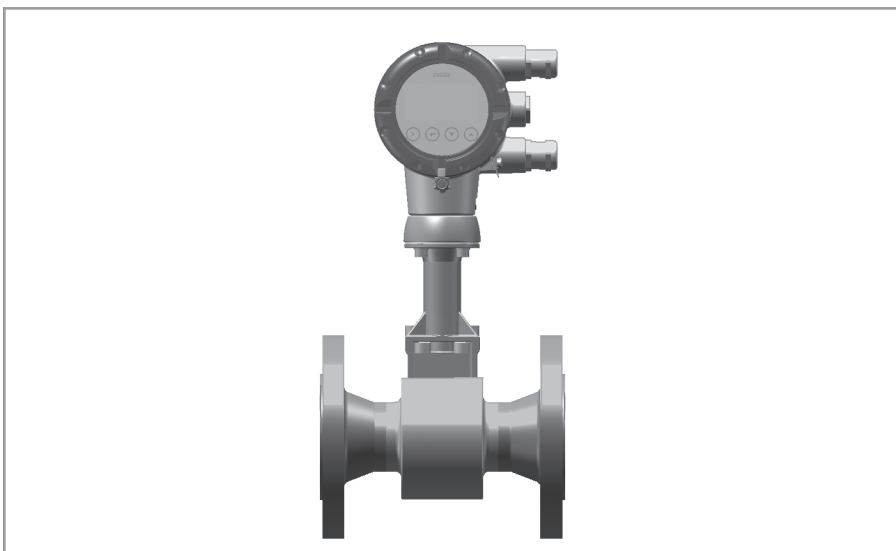
- *Insulation must be limited to the piping. Unobstructed ventilation of the signal converter must be ensured.*



The permitted ambient temperature range is indicated on the nameplate; depending on the device version it is $T_{amb} = -40...+65^{\circ}\text{C}$ / $-40...+149^{\circ}\text{F}$.

The minimum product temperature is -40°C / -40°F .

Max. permissible product and ambient temperatures with signal converter or connection box mounted above the flow sensor



Temperature class in °C

Temperature class	T6	T5	T4		T3			T2		
T _{amb} in °C	40	60	60	65	40	60	65	40	60	65
Nominal size										
DN15...25	85	65	135	135 ①	200	200 ①	185 ①	240	210 ①	185 ①
DN40...50	75	65	135	135 ①	200	195 ①	165 ①	240	195 ①	165 ①
DN80...100	70	65	135 ①	135 ①	200	165 ①	145 ①	240 ①	165 ①	145 ①
DN150...300	80	65	135	135 ①	200	200 ①	170 ①	240	200 ①	170 ①

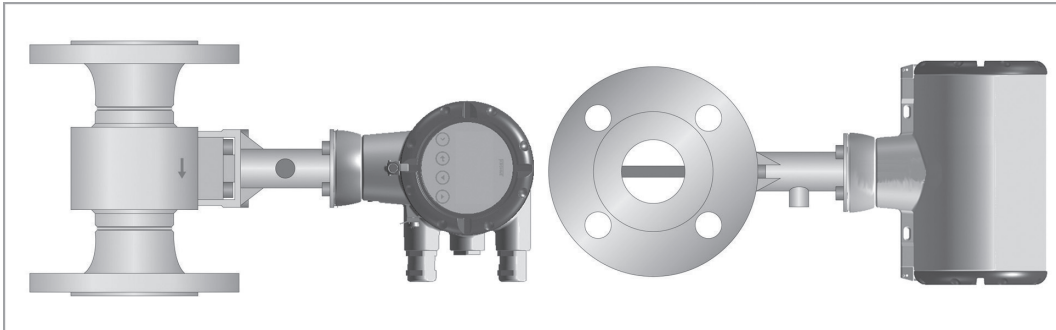
① Permanent service temperature of connecting cable and cable entry min. 80°C

Temperature class in °F

Temperature class	T6	T5	T4		T3			T2		
T _{amb} in °F	104	140	140	149	104	140	149	104	140	149
Nominal size										
DN15...25	185	149	275	275 ①	392	392 ①	365 ①	464	410 ①	365 ①
DN40...50	167	149	275	275 ①	392	383 ①	329 ①	464	383 ①	329 ①
DN80...100	158	149	275 ①	275 ①	392	329 ①	293 ①	464 ①	329 ①	293 ①
DN150...300	176	149	275	275 ①	392	392 ①	338 ①	464	392 ①	338 ①

① Permanent service temperature of connecting cable and cable entry min. 176°F

Max. permissible product and ambient temperatures with signal converter or connection box mounted at side or underneath the flow sensor



Temperature class in °C

Temperature class	T6	T5	T4		T3			T2		
T _{amb} in °C	40	60	60	65	40	60	65	40	60	65
Nominal size										
DN15...25	85	90	135	135	200	200	200 ①	240	240	240 ①
DN40...50	85	80	135	135	200	200	200 ①	240	240	240 ①
DN80...100	85	75	135	135 ①	200	200 ①	200 ①	240	240 ①	240 ①
DN150...300	85	80	135	135	200	200	200 ①	240	240	240 ①

① Permanent service temperature of connecting cable and cable entry min. 80°C

Temperature class in °F

Temperature class	T6	T5	T4		T3			T2		
T _{amb} in °F	104	140	140	149	104	140	149	104	140	149
Nominal size										
DN15...25	185	194	275	275	392	392	392 ①	464	464	464 ①
DN40...50	185	176	275	275	392	392	392 ①	464	464	464 ①
DN80...100	185	167	275	275 ①	392	392 ①	392 ①	464	464 ①	464 ①
DN150...300	185	176	275	275	392	392	392 ①	464	464	464 ①

① Permanent service temperature of connecting cable and cable entry min. 176°F

Max. permissible product and ambient temperatures for devices with painted flow sensors / signal converters or connection box mounted above the flow sensor

Temperature class in °C

Temperature class	T6	T5	T4		T3			T2		
T _{amb} in °C	40	60	60	65	40	60	65	40	60	65
Nominal size										
DN15...25	60	60	120 ①	120 ①	120	120 ①	120 ①	120	120 ①	120 ①
DN40...50	55	60	120 ①	115 ①	120	120 ①	115 ①	120	120 ①	115 ①
DN80...100	55	60	110 ①	105 ①	120	110 ①	105 ①	120	110 ①	105 ①
DN150...300	60	60	120 ①	115 ①	120	120 ①	115 ①	120	120 ①	115 ①

① Permanent service temperature of connecting cable and cable entry min. 80°C

Temperature class in °F

Temperature class	T6	T5	T4		T3			T2		
T _{amb} in °F	104	140	140	149	104	140	149	104	140	149
Nominal size										
DN15...25	140	140	248 ①	248 ①	248	248 ①	248 ①	248	248 ①	248 ①
DN40...50	131	140	248 ①	239 ①	248	248 ①	239 ①	248	248 ①	239 ①
DN80...100	131	140	230 ①	221 ①	248	230 ①	221 ①	248	230 ①	221 ①
DN150...300	140	140	248 ①	239 ①	248	248 ①	239 ①	248	248 ①	239 ①

① Permanent service temperature of connecting cable and cable entry min. 176°F

Max. permissible product and ambient temperatures for devices with painted flow sensors / signal converters or connection box mounted at side or underneath the flow sensor

Temperature class in °C

Temperature class	T6	T5	T4		T3			T2		
T _{amb} in °C	40	60	60	65	40	60	65	40	60	65
Nominal size										
DN15...25	85	65	120	120 ①	120	120	120 ①	120	120	120 ①
DN40...50	70	65	120 ①	120 ①	120	120 ①	120 ①	120	120 ①	120 ①
DN80...100	70	65	120 ①	120 ①	120	120 ①	120 ①	120	120 ①	120 ①
DN150...300	75	65	120	120 ①	120	120	120 ①	120	120	120 ①

① Permanent service temperature of connecting cable and cable entry min. 80°C

Temperature class in °F

Temperature class	T6	T5	T4		T3			T2		
T _{amb} in °F	104	140	140	149	104	140	149	104	140	149
Nominal size										
DN15...25	185	149	248	248 ①	248	248	248 ①	248	248	248 ①
DN40...50	158	149	248 ①	248 ①	248	248 ①	248 ①	248	248 ①	248 ①
DN80...100	158	149	248 ①	248 ①	248	248 ①	248 ①	248	248 ①	248 ①
DN150...300	167	149	248	248 ①	248	248	248 ①	248	248	248 ①

① Permanent service temperature of connecting cable and cable entry min. 176°F

Max. permissible product and ambient temperatures with signal converter in stainless steel (bright) or connection box in stainless steel (bright) mounted above the flow sensor

Temperature class in °C

Temperature class	T6	T5	T4		T3			T2		
T _{amb} in °C	40	60	60	65	40	60	65	40	60	65
Nominal size										
DN15...25	70	60	135	135 ①	200	180 ①	155 ①	225	180 ①	155 ①
DN40...50	65	60	135 ①	135 ①	200	160 ①	140 ①	235	160 ①	140 ①
DN80...100	60	60	135 ①	125 ①	200 ①	140 ①	125 ①	200 ①	140 ①	125 ①
DN150...300	65	60	135 ①	135 ①	200	165 ①	145 ①	220	165 ①	145 ①

① Permanent service temperature of connecting cable and cable entry min. 80°C

Temperature class in °F

Temperature class	T6	T5	T4		T3			T2		
T _{amb} in °F	104	140	140	149	104	140	149	104	140	149
Nominal size										
DN15...25	158	140	275	275 ①	392	356 ①	311 ①	437	356 ①	311 ①
DN40...50	149	140	275 ①	275 ①	392	320 ①	284 ①	455	320 ①	284 ①
DN80...100	140	140	275 ①	257 ①	392	284 ①	257 ①	392 ①	284 ①	257 ①
DN150...300	149	140	275 ①	275 ①	392	329 ①	293 ①	428	329 ①	293 ①

① Permanent service temperature of connecting cable and cable entry min. 176°F

Max. permissible product and ambient temperatures with signal converter in stainless steel (bright) or connection box in stainless steel (bright) mounted at side or underneath the flow sensor

Temperature class in °C

Temperature class	T6	T5	T4		T3			T2		
T _{amb} in °C	40	60	60	65	40	60	65	40	60	65
Nominal size										
DN15...25	85	60	135	135	200	200	200 ①	240	240	240 ①
DN40...50	85	60	135	135 ①	200	200	200 ①	240	240 ①	225 ①
DN80...100	85	60	135	135 ①	200	200 ①	200 ①	240	240 ①	225 ①
DN150...300	85	60	135	135	200	200	200 ①	240	240	240 ①

① Permanent service temperature of connecting cable and cable entry min. 80°C

Temperature class in °F

Temperature class	T6	T5	T4		T3			T2		
T _{amb} in °F	104	140	140	149	104	140	149	104	140	149
Nominal size										
DN15...25	185	140	275	275	392	392	392 ①	464	464	464 ①
DN40...50	185	140	275	275 ①	392	392	392 ①	464	464 ①	437 ①
DN80...100	185	140	275	275 ①	392	392 ①	392 ①	464	464 ①	437 ①
DN150...300	185	140	275	275	392	392	392 ①	464	464	464 ①

① Permanent service temperature of connecting cable and cable entry min. 176°F

2.8 Electrical data

Signal circuits

The vortex flowmeter signal circuits may only be connected to separate, certified, intrinsically safe isolating amplifiers or zener barriers connected to separate, intrinsically safe circuits with the following maximum values per circuit:

Device version	Circuit Terminals	Maximum values				
		U _i [V]	I _i [mA]	P _i [W]	C _i [nF]	L _i [μH]
VTX3 K i Ex VTX3 W i Ex	Current output 4...20 mA C1, C2	30	130	1	10	~ 0
	Binary output M1, M2, M3, M4	30	100	1	10	~ 0
	Current input I1, I2	30	130	1	15	~ 0
VTX3 K FF i Ex VTX3 W FF i Ex	FF / Entity Model I.S. A1, A2 B1, B2	24	250	1.2	~ 0	~ 0
	FF / FISCO A1, A2 B1, B2	17.5	380	5.32	~ 0	~ 0
	FISCO FIELD DEVICE					
VTX3 K PA i Ex VTX3 W PA i Ex	FISCO A1, A2 B1, B2	24	380	5.32	~ 0	~ 0
	FISCO FIELD DEVICE					

Flow sensor circuits

For the compact versions, the intrinsically safe flow sensor circuits are designed as internal circuits.

For the remote versions, the intrinsically safe flow sensor circuits are led through.
The maximum permissible safety values of the flow sensor circuits are listed below:

Remote signal converter, flow sensor circuit (terminal 1 to 7, colour-coded)

$$U_o = 6.65 \text{ V}; I_o = 1107 \text{ mA}; P_o = 650 \text{ mW}; C_o = 1.5 \text{ μF}; L_o = 73 \text{ μH}$$

Remote flow sensor (terminal 1 to 7, colour-coded)

$$U_i = 7 \text{ V}; I_i = 1107 \text{ mA}; P_i = 650 \text{ mW}; C_i = 0; L_i = 0$$



The verification of intrinsic safety for the interconnection between the flow sensor and the signal converter is not necessary, if the cable length does not exceed 50 m / 164 ft and the supplied cable is used.

3.1 Mounting

Mounting and setup must be carried out according to the applicable installation standards (e.g. EN 60079-14) by qualified personnel trained in explosion protection.

The information given in the manual and these instructions must always be observed.

Vortex flowmeters must be installed in such a way that

- no external forces are affecting the indication unit.
- 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.

Aligning the signal converter

The signal converter and the connection box for the remote versions may be aligned on the base or the wall bracket up to a maximum of $\pm 180^\circ$. For this reason, the M4 hexagon socket screw connecting the base and the signal converter or the connection box must be loosened. Once the signal converter or the connection box has been turned, it must be screwed back on to the base again (tightening torque 2 Nm).

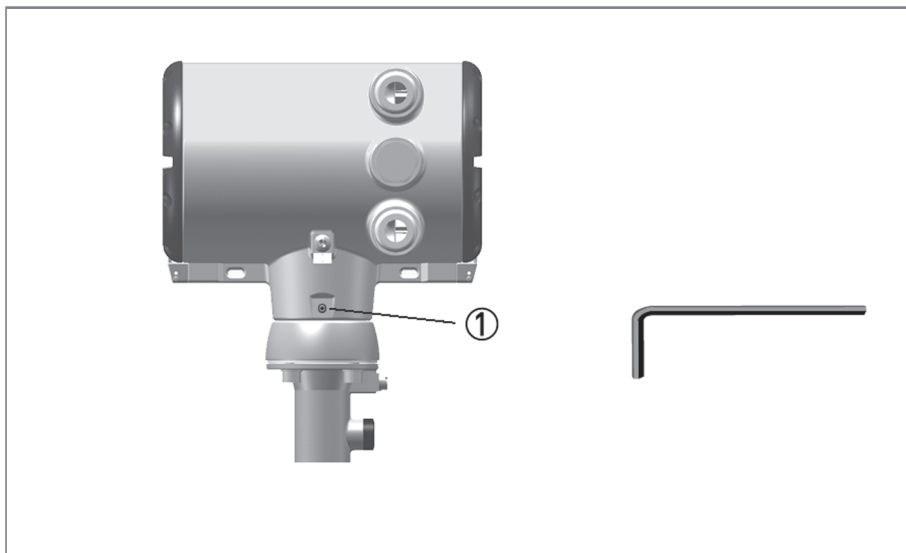


Figure 3-1: Aligning the signal converter

- ① M4 hexagon socket screw on connection housing



- De-energise the signal converter.
- Loosen the hexagon socket screw ①.
- Turn the signal converter or the connection box.
- Screw signal converter or connection box back to the base again.

3.2 Special conditions

Electrostatics

If the installation takes place in hazardous areas of group IIC, the instructions for electrostatics must be observed. For further information refer to *Electrostatic charge* on page 23.

Thermal and electrical data

Observe the maximum ambient and product temperatures and electrical data. For further information refer to *Ambient temperature / temperature classes* on page 8 and refer to *Electrical data* on page 16.

4.1 General notes

The separate intrinsically safe signal circuits are electrically connected in the terminal compartment of the signal converter. The circuits are designed in protection type "intrinsically safe" and galvanically isolated from ground (test voltage $\geq 500 V_{\text{eff}}$).

The intrinsically safe flow sensor circuits are connected in the connection boxes on the wall bracket and on the flow sensor.

The connecting cables should be selected according to the applicable installation standards (e.g. EN 60079-14) and the maximum operating temperature.

The connecting cable between the flow sensor and the wall bracket for remote versions is part of the supply.

- The connecting cables must be fixed and laid so they are sufficiently protected against damage.
- All cores that are not used must be securely connected to the ground potential of the hazardous area or carefully insulated against each other and against ground (test voltage $\geq 500 V_{\text{eff}}$).
- Lay cables so as to ensure that there is sufficient distance between surfaces of the flow sensor and the connecting cable.
- Supplied blind plugs / cable entries guarantee protection against foreign objects and water (protection category) IP66/67 according to EN 60529.
- Before connecting or loosening the equipotential bonding cable, ensure there are no differences in potential.
- Any existing cable shields should be connected to ground according to applicable installation regulations (EN 60079-14). A terminal in the terminal compartment permits a short way grounding of the cable shields.
- The outer diameter of the connecting cable must be within the sealing range of the cable entry (6...12 mm / 0.24...0.47").
- Unused cable entries are to be closed.

Ensure that the gaskets and incised gasket ring are tight.

4.2 Power supply

Vortex flowmeters do not require a separate power supply.

The required supply for the built-in electronics is provided via the 4...20 mA current output or the bus connection.

4.3 Inputs / Outputs

The terminal assignment is described in the manual. The signal circuits of the vortex flowmeters may only be connected to certified intrinsically safe slave units or circuits. For more information refer to chapter "Electrical data".

The current output, the current input and the binary output are designed for connection to a certified, intrinsically safe circuit in protection type "intrinsic safety Ex ia IIC or Ex ib IIC".

The bus connections are designed for connection to a certified, intrinsically safe circuit in protection type "intrinsic safety Ex ia IIC or Ex ib IIC" according to the FISCO model or according to the entity concept.

The current output, the current input and the binary output are reliably separated up to a peak voltage of 60 V. All signal circuits are electrically isolated from the ground.

4.4 Grounding and equipotential bonding



CAUTION!

Equipotential bonding

Vortex signal converters and flow sensors must be included in the on-site equipotential bonding system according to EN 60079-14! They are connected to the PA terminals.

For compact versions and measuring devices with flange connections, the flow sensor is conductively connected to the pipeline.

For compact versions and measuring device of the type "sandwich", a separate conductor connected either to the internal or external PA terminal must be provided to connect to the equipotential bonding.

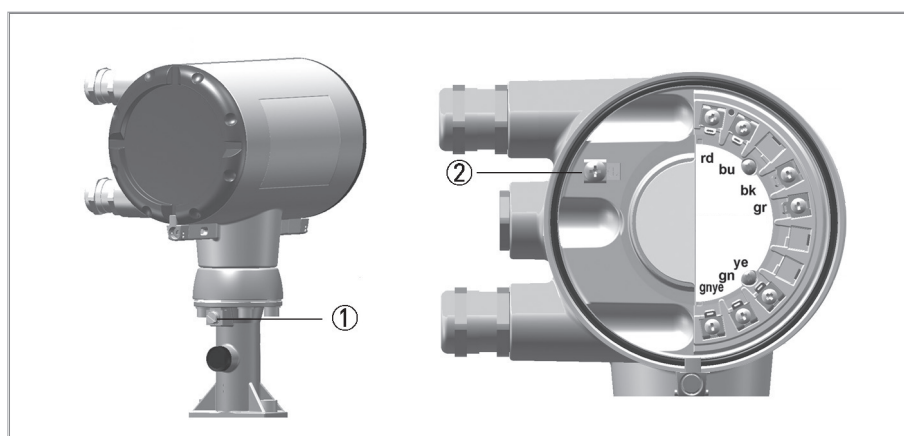


Figure 4-1: Ground connection of the compact version

- ① Electrical grounding connection on connection piece between the flow sensor and the signal converter
- ② Electrical grounding terminal in the housing

For remote versions with pressure sensor, the connection of the flow sensor can either be made via the PA connection in the signal converter terminal compartment or via the external PA connection.

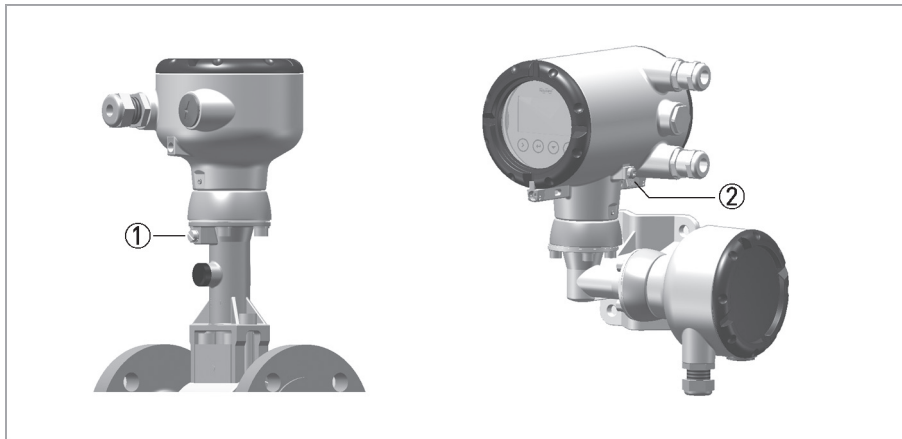


Figure 4-2: Ground connection of the remote version

- ① Electrical grounding connection on the flow sensor
- ② Electrical grounding connection on the housing of the signal converter

4.5 Flow sensor circuits (remote version only)

Observe the following points when connecting the flow sensor to the signal converter:

- Use only the supplied connecting cable (max. length 50 m / 164 ft).
- Before connecting or loosening the equipotential bonding cable, ensure there are no differences in potential.
- Connect the connecting cable shield to the equipotential bonding of the hazardous area in the wall bracket. On the flow sensor side, the shield must be carefully isolated from the earth (test voltage 500 V_{eff}) and connected via the terminal end to the corresponding connector on the terminal block.
- The terminal compartments of the flow sensor circuits are supplied with a bridge between the internal PA connection and the terminal with the designation "gnye". This connection must not be separated.

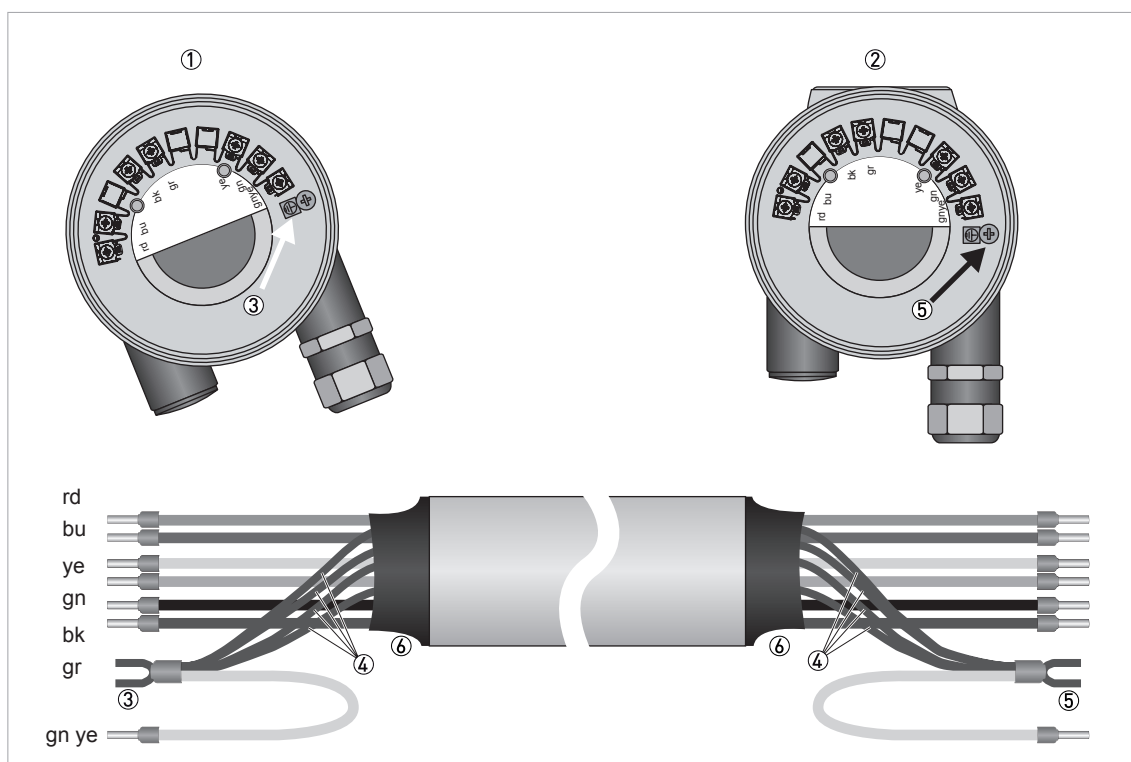


Figure 4-3: Connection of remote version

- ① Connection terminal flow sensor
- ② Connection terminal signal converter
- ③ Connection shielding flow sensor
- ④ Shielding (drain wire and overall shield)
- ⑤ Connection shielding signal converter
- ⑥ Heat shrink tubing

The flow sensor circuit is designed in protection type "intrinsic safety Ex ia IIC".

5.1 Start-up

Start-up is only permitted when the measuring device:

- is correctly installed in the system and connected.
- has been checked for the proper state with regard to its installation and connection requirements.

The operator of the system has to check prior to start-up, if the start-up was in compliance with the national regulations for checks.

5.2 Operation

Vortex flowmeters must be operated in such a way that they remain within the maximum and minimum permissible temperatures and pressures and the electrical limit values.

Vortex flowmeters may only be operated if the equipment parts necessary for safety are effective in the long run, and are not rendered inoperable during operation.

In case of operation with flammable products the measuring units must be included in the periodic pressure tests of the system.

Operating the converter insert during operation is permitted. To do so, remove the housing cover. Close the housing cover immediately after adjustment of the converter insert.

Terminal compartments (protection type "intrinsic safety") may be opened even in an energised state in hazardous area.

Work on electrical connections (e.g. configuration via the HART® interface) is also permitted in an energised state. Terminal compartments must be closed immediately upon completion of the work.

5.3 Electrostatic charge

In order to avoid ignition hazards due to electrostatic charge, vortex flowmeters may not be used in areas with:

- processes that generate strong charges,
- mechanical friction and cutting processes,
- spraying of electrons (e.g. in the vicinity of electrostatic painting systems) or
- pneumatically conveyed dust is exposed.



CAUTION!

*Electrostatic charging of the housing surface by friction must be avoided.
The devices must not be dry cleaned.*

6.1 Maintenance

Maintenance work of a safety-relevant nature within the meaning of explosion protection may only be carried out by the manufacturer, his authorised representative or under the supervision of authorised inspectors.

Treat cover threads as necessary with the lubricating paint UNIMOLY C220®.

For systems in hazardous areas, regular tests are required in order to maintain the proper condition.

The following checks are recommended:

- Check the housing, the cable entries and the feed lines for corrosion and/or damage.
- Checking the measuring unit and the piping connections for leakage.
- Check the measuring unit and the indicator for dust deposits.
- Including the flowmeter in the regular pressure test of the process line.

6.2 Dismantling

Exchanging the built-in equipment

The dismantling and installation is within the responsibility of the operator.

Due to the modular design of the vortex flowmeters, from a safety perspective, the electrical equipment built into the display can be replaced with identical spare parts. To do so, remove the housing cover. Close the housing cover immediately after the spare parts are exchanged. Ensure that the cover seal is tight.

General notes

Exchanging and dismantling should take place in a de-energised state, if at all possible. If that is not possible, the basic conditions for intrinsic safety (e.g. no grounding or connection of different intrinsically safe circuits to one another) must be observed during dismantling.

Display

The display can be rotated in 90° increments. It is connected to the connector as shown in the following figure.

Exchanging the converter insert

It is permitted to replace the entire KV18 converter insert with a brand-new version identical in type.

Take special note of the following figure and:

- ensure that the converter insert type is the same by checking the nameplates.
- the connecting cable of the flow sensor circuits is to be laid in the cutout provided between the converter insert and housing. Avoid damage such as that caused by crushing.
- proper connection of the flow sensor ⑤ and the display connector ①.
- tighten the mounting screws M4 ⑦ evenly.

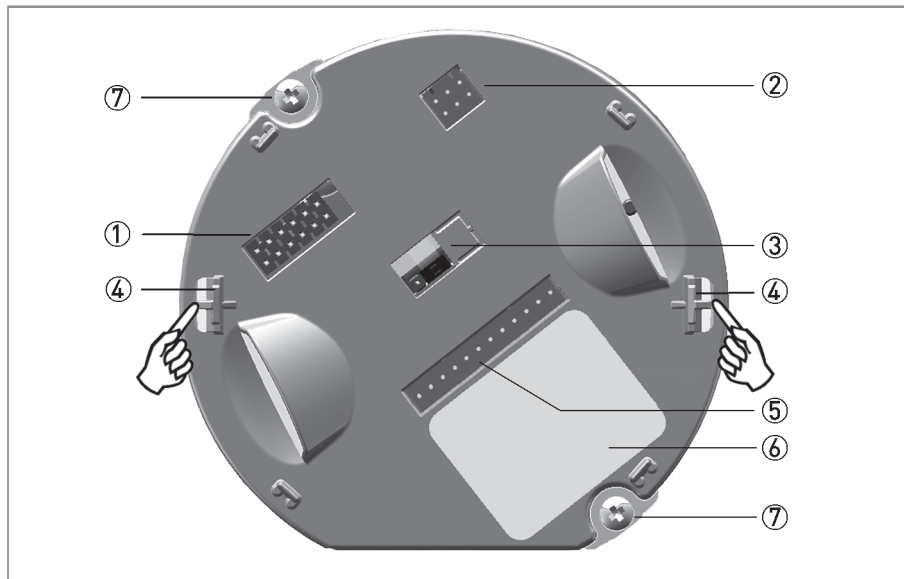


Figure 6-1: Connection of the signal converter module

- ① Connector for LC display
- ② Service connector
- ③ SIL jumper
- ④ Display clamps
- ⑤ Connection to the flow sensor
- ⑥ Nameplate of the converter insert
- ⑦ Fixing screw

Exchanging the entire device

The dismantling and installation is within the responsibility of the operator.

Before disconnecting the electric connecting cable of the device, make sure that all cables leading to the indication unit are isolated from the ground of the hazardous area. This also applies to functional earthing conductors (FE) and equipotential bonding conductors (PA).



CAUTION!

- *Pressurised pipes have to be depressurised before removing the measuring unit.*
- *In the case of environmentally critical or hazardous products, appropriate safety precautions must be taken with regard to residual liquids in the measuring unit.*
- *New gaskets have to be used when re-installing the device in the piping.*





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