TÜV NORD

Translation

(1) EC-Type Examination Certificate

(2) Equipment and protective systems intended for use in potentially explosive atmospheres, **Directive 94/9/EC**

(3)	**Certificate Number**	**TÜV 10 ATEX 556309 X**
(4)	for the equipment:	Flowmeter TRIO-WIRL Typ V_4A./S_4A. resp. FV4000 Type VT4A. / VR4A. resp. FS4000 Type ST4A. / SR4A.
(5)	of the manufacturer:	**ABB Automation Products GmbH**
(6)	Address:	Dransfelder Str. 2 37079 Göttingen Germany
	Order number:	8000556309
	Date of issue:	2011-07-20

(7) This equipment or protective system and any acceptable variation thereto are specified in the schedule to this certificate and the documents therein referred to.

(8) The TÜV NORD CERT GmbH, notified body No. 0044 in accordance with Article 9 of the Council Directive of the EC of March 23, 1994 (94/9/EC), certifies that this equipment or protective system has been found to comply with the Essential Health and Safety Requirements relating to the design and construction of equipment and protective systems intended for use in potentially explosive atmospheres given in Annex II to the Directive. The examination and test results are recorded in the confidential report No. 10 203 556309.

(9) Compliance with the Essential Health and Safety Requirements has been assured by compliance with:

EN 60079-0:2006 **EN 60079-11:2007** **EN 60079-27:2008**
EN 60079-31:2009

(10) If the sign "X" is placed after the certificate number, it indicates that the equipment or protective system is subject to special conditions for safe use specified in the schedule to this certificate.

(11) This EC-type examination certificate relates only to the design, examination and tests of the specified equipment in accordance to the Directive 94/9/EC. Further requirements of the Directive apply to the manufacturing process and supply of this equipment. These are not covered by this certificate.

(12) The marking of the equipment or protective system must include the following:

II 2 G Ex ia IIC T4 Gb
II 2 D Ex ta IIIC T85°C ... TMedium Db IP67 (Typ VT4A_ / VR4A_ / ST4A_ / SR4A_) resp.
II 2 D Ex ta IIIC T85°C Db IP67 (Typ VR4A_ / SR4A_)

TÜV NORD CERT GmbH, Langemarckstraße 20, 45141 Essen, accredited by the central office of the countries for safety engineering (ZLS) Ident. Nr. 0044, legal successor of the TÜV NORD CERT GmbH & Co. KG Ident. Nr. 0032

The head of the certification body

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(13) SCHEDULE

(14) EC-Type Examination Certificate No. TÜV 10 ATEX 556309 X

(15) Description of equipment

The TRIO-WIRL Typ V_4A./S_4A. "Fieldbus" resp. Vortex Flowmeter FV4000 Type VT4A. / VR4A. resp. Swirl Flowmeter FS4000 Type ST4A. / SR4A. transporting and metering the flowrate of liquids, gases (including unstable gases) and steam and measuring the actual volume flow at operating conditions. The measuring principle is based on the detection of frequencies of turbulences in the rear of a flow-type body (VORTEX) resp. the rotation frequency of the medium in the rear of a routing body (DRALL) by piezoelectric sensors.

Application	Permitted range of ambient temperature	Maximum medium temperature [°C]	Temperature class
Ex ia IIC T4 Gb	-40 °C ≤ T_{amb} ≤ +70 °C	130°C	T4
		195°C	T3
		290°C	T2
		400°C	T1

table 1: dependence of ambient temperature range, maximum mediums temperature and temperature class

Option	Permitted range of ambient temperature	Maximum medium temperature [°C]
Temperature +110 °C for the cable gland	-40 °C ≤ T_{amb} ≤ +70 °C	+400 °C
Temperature +80 °C for the cable gland and the plug	-40 °C ≤ T_{amb} ≤ +40 °C	+400 °C
	-40 °C ≤ T_{amb} ≤ +50 °C	+320 °C
	-40 °C ≤ T_{amb} ≤ +60 °C	+240 °C
	-40 °C ≤ T_{amb} ≤ +70 °C	+180 °C

table 2: the temperature class for the option in accordance with this table in dependence with the medium temperature of table 1. The listed values are valid for thermal isolated flowmeters too.

Technical data:

supply circuit (terminal 31, 32)

in type of protection Intrinsic Safety Ex ia IIC
only for the connection of certified intrinsically safe circuit with the following maximum values in accordance with the FISCO model:

U_i = 24 V
I_i = 380 mA
P_i = 9.12 W
effective internal capacitance C_i = 2.4 nF
eff. int. cap. against equipotential bonding C_i = 2.4 nF
effective internal inductance L_i = 10 µH

switching output (terminal 41, 42)	in type of protection Intrinsic Safety Ex ia IIC only for the connection of certified intrinsically safe circuit with the following maximum values: U_i = 15 V I_i = 30 mA P_i = 115 mW effective internal capacitance C_i = 3.6 nF eff. int. cap. against equipotential bonding C_i = 3.6 nF effective internal inductance L_i = 0.133 mH

Type VR4. and SR4.

piezo sensor (terminal 85, 86, 87) and PT100 circuit (terminal 81, 82, 83, 84)	in type of protection Intrinsic Safety Ex ia IIC only for the connection of certified intrinsically safe circuit with the following maximum values: U_O = 8.5 V I_O = 1073 mA P_O = 2280 mW effective internal capacitance C_i = negligible small effective internal inductance L_i = negligible small

Type VT4. and ST4.

For this types the sensor circuits are apparatus internal intrinsically safe circuits.

(16) Test documents are listed in the test report No. 10 203 556309.

(17) Special conditions for safe use

- The over voltage category III / II must not be exceeded by connected non mains / mains circuits.
- If the protective earth conductor is connected in the terminal compartment of the flowmeter it shall be ensured that there could occur no hazardous difference of potential between the protective earth conductor and the equipotential bonding of the explosion hazardous area.
- The model with terminal plug M12X1 shall only be used for apparatuses for EPL Gb applications. It is not permitted for EPL Db use.

(18) Essential Health and Safety Requirements

no additional ones