Ex-ATEX and IECEx Certified Hall Effect Single Channel Speed Sensor DSF xx10.xx xHV Ex-ATEX

General

Function	The speed sensors **DSF xx10.xx xHV Ex-ATEX** are suitable for use with a pole wheel to generate speed proportional frequency signals. They exhibit dynamic behaviour, whereby pulse generation down to 0.05 Hz is guaranteed. The sensing element is a magnetically biased Hall device, followed by an amplifier having a trigger characteristic and short circuit proof output stage.
Safety Notice	The speed sensors **DSF xx10.xx xHV Ex-ATEX** are certified for applications in areas with explosive atmospheres. These types are to be duly used in undamaged and clean condition. Modifications of sensors are prohibited if not expressly listed in these operating instructions.
Conformity to Standards	**DSF xx10.xx xHV Ex-ATEX** series sensors are certified according to **ATEX/IECEx ia:** EN 60079-0, EN 60079-11 and IEC 60079-0, IEC 60079-11. (For details see certificates at the end of this document) **II 2G Ex ia IIC T6-T1 Gb** for use in flammable gas atmospheres **II 2D Ex ia IIIC T135°C Db** for use in flammable dust atmospheres The sensors have been designed, manufactured and tested according to the state of the art. For their application the restrictions listed in this operating instruction and the relevant certificate with its supplements and annex must be observed.

valid for sensors with serial no. S1826 and later

Product ID

Type #	Product #	Drawing #
DSF 1210.00 SHV Ex-ATEX (2m)	374Z-05066	110428F1
DSF 1210.00 SHV Ex-ATEX (5m)	374Z-05176	110428F1
DSF 1210.00 SHV Ex-ATEX (10m)	374Z-05590	110428F1
DSF 1410.00 SHV Ex-ATEX (2m)	374Z-05253	111496F1
DSF 1410.00 SHV Ex-ATEX (5m)	374Z-05254	111496F1
DSF 1410.00 SHV Ex-ATEX (10m)	3742607187	111496F1
DSF 1410.02 AHV Ex-ATEX L=70	374Z-05208	113233B
DSF 1410.02 AHV Ex-ATEX L=100	374Z-05204	113233
DSF 1410.02 AHV Ex-ATEX L=140	374Z-05207	113233A
DSF 1610.03 AHV Ex-ATEX L100	3742609177	121284
DSF 1610.13 AHV Ex-ATEX L100	3742609291	121450
DSF 1610.14 AHV Ex-ATEX L176	3742609292	121458
DSF 1610.15 AHV Ex-ATEX L270	3742609322	121459
DSF 1710.00 AHV S176 Ex-ATEX	374Z-04816	112295
DSF 1810.00 SHV Ex-ATEX (2m)	374Z-05067	110687F1
DSF 1810.00 SHV Ex-ATEX (5m)	374Z-05490	110687F1
DSF 1810.00 S2HV Ex-ATEX (5m)	374Z-05068	112909
DSF 1810.02 SHV Ex-ATEX (5m)	374Z-05364	113727
DSF 1810.04 SHV Ex-ATEX (5m)	3742612290	125346
DSF 2010.00 AHV S30 Ex-ATEX L=134.5	374Z-05250	113342
DSF 2010.00 AHV S30 Ex-ATEX L=193.5	374Z-05251	113343
DSF 2210.00 AHV Ex-ATEX	374Z-05072	110831F1
DSF 2210.00 SHV Ex-ATEX (2m)	374Z-05069	110777F1
DSF 2210.00 SHV Ex-ATEX (5m)	374Z-05221	110777F1
DSF 2210.00 SHV Ex-ATEX (10m)	374Z-05881	110777F1
DSF 2210.00 S2HV Ex-ATEX (5m)	374Z-05071	112911
DSF 2210.05 AHV Ex-ATEX	374Z-05847	115555
DSF 2210.06 AHV Ex-ATEX	3742607163	118396
DSF 2210.07 AHV Ex-ATEX	3742609009	121047
DSF 2210.87 SHV Ex-ATEX (2m)	374Z-05070	111037F1
DSF 2210.87 SHV Ex-ATEX (5m)	374Z-05444	111037F1
DSF 2210.87 SHV S85 Ex-ATEX	374Z-05216	113258
DSF CD10.01 SHV Ex-ATEX	374Z-05886	115785
DSF EH10.00 AHV Ex-ATEX	374Z-05205	113235
DSF EH10.00 SHV Ex-ATEX (5m)	374Z-05277	113391
DSF EH10.19 SHV Ex-ATEX	374Z-05887	115787
DSF EH10.20 SHV Ex-ATEX	3742606606	117127

Technical Data

Supply voltage	8 ... 28 VDC, max. superimposed AC ripple of 25mVpp. The voltage drop as a result of the cable impedance and safety barriers resistance must be allowed for. Protected against reverse polarity.
Current consumption	Max. 15 mA (without load)
Signal output	• Square wave from push-pull output stage • DC coupled to the supply (0V = reference voltage) • Load current max. 25 mA • Output voltage: $U_{Hi} > U_{Supply}$ - 4 V (at I_{source} = 25 mA) $U_{Lo} < 2$ V (at I_{sink} = 25 mA) • The voltage drop as a result of the cable impedance and resistance of safety barriers must be allowed for. • Short circuit proof and protected against reverse polarity.
Frequency range	0.05 Hz...20 kHz
Electromagnetic compatibility (EMC)	According to 2014/30/EU, IEC 61000-6-2, IEC 61000-6-2
Housing	Stainless steel (material number 1.4305 or 1.4301), front side hermetically sealed, electronic components potted in a chemical and age proof synthetic resin or ceramic. Maximum permissible tightening torque: **12 Nm** for M12x1 **25 Nm** for M14x1 **35 Nm** for M16x1 **40 Nm** for M18x1.5 **50 Nm** for M18x1 **75 Nm** for M22x1 Dimensions according to drawing.
Protection class	IP68 (head), IP67 (cable connection), IP 54 (where connector used)
Vibration immunity	5 g_n in the range 5...2000Hz
Shock immunity	20 g during 20 ms, half-sine wave
Pole wheel	Toothed wheel made of a magnetically permeable material (e.g. Steel 1.0036) • Minimum tooth width 10 mm • Side offset < 0.2 mm • Eccentricity < 0.2mm • Involute gear wheel preferred (module ≥0.5)
Air gap sensor / pole wheel	Air gap between pole wheel (involute gear) and sensor housing: • Module 1 mm: 0.2...1.0 mm • Module 2 mm: 0.2...2.5 mm • Module 4 mm (and larger): 0.2...4.5 mm
Insulation	Housing, cable screen (if applicable) and electronics galvanically separated (500 V/50 Hz/ 1 min)

Ambient temperature	The maximum permissible ambient temperature depends upon the following parameters: • Sensor housing size • Maximum available electrical power from the intrinsically safe sensor power supply and from the intrinsically safe input circuit of the attached instrumentation and any Zener barriers. • Ex temperature class (T1-T6) The temperature and atmosphere limitations for each sensor housing size, as shown in TABLE 1, must be observed and the restrictions given in the EU-Type-Examination Certificate must be adhered to. The minimum allowable temperature (according to the certificate) is listed in TABLE 2 and TABLE 3
Ex-Safety and Marking	All installations must be carried out by an expert. General safety requirements must be met. For Ex safety relevant issues, the applicable standards have to be met in addition to the requirements of this operating instruction and attached certificates. **See also below, the Ex related information in this documentation.** Notified body for the certification of the Jaquet quality management system to the requirements of the ATEX directive 2014/34/EU and the IECEx system is CSA Group Netherlands B.V. On ATEX products the CE-marking is accompanied by CSA Group certification identification number 2813. The previous identification number 0063 (Kiwa) or 2572 (PRIMARA) is no longer valid, but might still appear on older drawings or products manufactured prior to NB number change.
Connection	The sensors must be connected according to the sensor drawing. Sensor wires are susceptible to radiated noise. Hence, the sensor wires must be laid as far as possible from large electrical machines. They must not run parallel in the vicinity of power cables. The permissible cable length is limited from a safety point according to the Certificate of Conformity ZELM 03 ATEX 0124X.

Installation	For installation, the CE directives for the installation of apparatus in explosive environments must be taken into account. The housing has to be aligned to the pole wheel according to the sensor drawing: Deviations in positioning may affect the functioning and decrease the noise immunity of the sensor. The sensor should be mounted with the middle of the face side over the middle of the pole wheel. Where the pole wheel has teeth or slots and with radial sensor location, the sensor would normally be mounted over the centre. Dependent upon the wheel width, a certain degree of axial movement is permissible. However, the centre of the sensor must be at least 3 mm from the edge of the pole wheel under all operating conditions. **A solid and vibration free mounting of the sensor is important.** Eventual sensor vibration relative to the pole wheel can induce additional output pulses. The sensors are insensitive to oil, grease etc and can be installed in arduous conditions. During installation, the smallest possible pole wheel to sensor gap should be set. The gap should however be set to prevent the face of the sensor ever touching the pole wheel. Within the air gap specified the amplitude of the output signals is not influenced by the air gap.
Maintenance	Sensors are maintenance-free. The sensors are fully potted and sealed and cannot be repaired.
Transport	Product must be handled with care to prevent damage of the front face.
Storage	Product must be stored in dry conditions. The storage temperature corresponds to the operation temperature.
Disposal	Product must be disposed of properly, it must not be disposed as domestic waste.

TABLE 1:
Ambient temperature for use in explosive gas environment Ⓔx II 2 G Ex ia IIC T6-T1 Gb

Sensor Type or Housing size	maximum available electrical power [mW]	maximum permissible ambient Temperature [°C] Ex hazardous areas: Temperature class						Examples for safety Zener barriers from STAHL (PTB 01 ATEX 2088)
		T1	T2	T3	T4	T5	T6	Power supply & Signal path
DSF 1210… to DSF 1610… and DSF AB10… DSF EH10…	900	125	125	125	75	40	25	1 x 9001/01-280-075-101 & 1 x 9001/01-280-050-101
	630	125	125	125	90	55	40	2 x 9001/01-168-075-101
	525	125	125	125	97	62	47	1 x 9001/01-168-075-101 & 1 x 9001/01-168-050-101
	490	125	125	125	100	65	50	1 x 9001/01-280-050-101 & 1 x 9001/01-280-020-101
	399	125	125	125	105	70	55	1 x 9001/01-168-075-101 & 1 x 9001/01-168-020-101
	300	125	125	125	111	75	60	-
	200	125	125	125	117	82	67	-
	100	125	125	125	123	88	73	-
	50	125	125	125	125	91	76	-
DSF 1710… to DSF 2010… and DSF CD10…	900	125	125	125	91	56	41	1 x 9001/01-280-075-101 & 1 x 9001/01-280-050-101
	630	125	125	125	103	68	53	2 x 9001/01-168-075-101
	525	125	125	125	107	72	57	1 x 9001/01-168-075-101 & 1 x 9001/01-168-050-101
	490	125	125	125	109	74	59	1 x 9001/01-280-050-101 & 1 x 9001/01-280-020-101
	399	125	125	125	113	78	63	1 x 9001/01-168-075-101 & 1 x 9001/01-168-020-101
	300	125	125	125	117	82	67	-
	200	125	125	125	121	86	71	-
	100	125	125	125	125	91	76	-
	50	125	125	125	125	93	78	-
DSF 2110… to DSF 3210...	900	125	125	125	89	54	39	1 x 9001/01-280-075-101 & 1 x 9001/01-280-050-101
	630	125	125	125	101	66	51	2 x 9001/01-168-075-101
	525	125	125	125	106	71	56	1 x 9001/01-168-075-101 & 1 x 9001/01-168-050-101
	490	125	125	125	108	73	58	1 x 9001/01-280-050-101 & 1 x 9001/01-280-020-101
	399	125	125	125	112	77	62	1 x 9001/01-168-075-101 & 1 x 9001/01-168-020-101
	300	125	125	125	116	81	66	-
	200	125	125	125	121	86	71	-
	100	125	125	125	125	90	75	-
	50	125	125	125	125	93	78	-

Ambient temperature for use in explosive dust environment Ⓔx II 2 D Ex ia IIIC T135°C Db:

-20 ... +100°C / -65 ... +100°C

Where dust clouds are present, the surface temperature of the sensor must not exceed 2/3 of the ignition temperature of the corresponding dust / air mixture.

In the event of dust coatings being present, the surface temperature of the sensor must not exceed the limits defined in the corresponding standards.

TABLE 2:
Sensor type description

Type	Art.-Nr.	Housing Thread	Connection Connector (1)	Mating connector supplied (1,2)	Cable length (3)	Ambient temperature range: according to TABLE 3
DSF 1210.00 SHV Ex-ATEX (2m)	374Z-05066	M12x1	-	-	2m	type 1
DSF 1210.00 SHV Ex-ATEX (5m)	374Z-05176	M12x1	-	-	5m	type 1
DSF 1210.00 SHV Ex-ATEX (10m)	374Z-05590	M12x1	-	-	10m	type 1
DSF 1410.00 SHV Ex-ATEX (2m)	374Z-05253	M14x1	-	-	2m	type 1
DSF 1410.00 SHV Ex-ATEX (5m)	374Z-05254	M14x1	-	-	5m	type 1
DSF 1410.00 SHV Ex-ATEX (10m)	3742607187	M14x1	-	-	10m	type 1
DSF 1410.02 AHV Ex-ATEX L=70	374Z-05208	M14x1	MS3102A-10SL-3P	yes	-	type 3
DSF 1410.02 AHV Ex-ATEX L=100	374Z-05204	M14x1	MS3102A-10SL-3P	yes	-	type 3
DSF 1410.02 AHV Ex-ATEX L=140	374Z-05207	M14x1	MS3102A-10SL-3P	yes	-	type 3
DSF 1610.03 AHV Ex-ATEX	3742609177	M16x1.5	MS3102A-10SL-3P	yes	-	type 3
DSF 1610.13 AHV Ex-ATEX L100	3742609291	M16x1.5	MS3102A-10SL-3P	yes	-	type 3
DSF 1610.14 AHV Ex-ATEX L176	3742609292	M16x1.5	MS3102A-10SL-3P	yes	-	type 3
DSF 1610.15 AHV Ex-ATEX L270	3742609322	M16x1.5	MS3102A-10SL-3P	yes	-	type 3
DSF 1710.00 AHV S176 Ex-ATEX	374Z-04816	M17x1	MS3102A-10SL-3P	yes	-	type 3
DSF 1810.00 SHV Ex-ATEX (2m)	374Z-05067	M18x1	-	-	2m	type 1
DSF 1810.00 SHV Ex-ATEX (5m)	374Z-05490	M18x1	-	-	5m	type 1
DSF 1810.00 S2HV Ex-ATEX (5m)	374Z-05068	M18x1	-	-	5m	type 1
DSF 1810.02 SHV Ex-ATEX (5m)	374Z-05364	M18x1.5	-	-	5m	type 1
DSF 1810.04 SHV Ex-ATEX (5m)	3742612290	M18x1	-	-	5m	type 1
DSF 2010.00 AHV S30 Ex-ATEX L=134.5	374Z-05250	M20x2.5	MS3102A-10SL-3P	yes	-	type 3
DSF 2010.00 AHV S30 Ex-ATEX L=193.5	374Z-05251	M20x2.5	MS3102A-10SL-3P	yes	-	type 3
DSF 2210.00 AHV Ex-ATEX	374Z-05072	M22x1	ERA 2S-304 CLL	yes	-	type 3
DSF 2210.00 SHV Ex-ATEX (2m)	374Z-05069	M22x1	-	-	2m	type 1
DSF 2210.00 SHV Ex-ATEX (5m)	374Z-05221	M22x1	-	-	5m	type 1
DSF 2210.00 SHV Ex-ATEX (10m)	374Z-05881	M22x1	-	-	10m	type 1
DSF 2210.00 S2HV Ex-ATEX (5m)	374Z-05071	M22x1	-	-	5m	type 1
DSF 2210.05 AHV Ex-ATEX	374Z-05847	M22x1	MS3102A-10SL-3P	no	-	type 3
DSF 2210.06 AHV Ex-ATEX	3742607163	M22x1	MS3102A-10SL-3P	yes	-	type 3
DSF 2210.07 AHV Ex-ATEX	3742609009	M22x1	MS3102A-10SL-3P	yes	-	type 3
DSF 2210.87 SHV Ex-ATEX (2m)	374Z-05070	M22x1	-	-	2m	type 1
DSF 2210.87 SHV Ex-ATEX (5m)	374Z-05444	M22x1	-	-	2m	type 1
DSF 2210.87 SHV S85 Ex-ATEX	374Z-05216	M22x1	-	-	5m	type 1
DSF CD10.01 SHV Ex-ATEX	374Z-05886	3/4"-20UNEF-2A	-	-	2m	type 1
DSF EH10.00 AHV Ex-ATEX	374Z-05205	5/8"-18UNF-2A	ERA 2S-304 CLL	yes	-	type 3
DSF EH10.00 SHV Ex-ATEX (5m)	374Z-05277	5/8"-18UNF-2A	-	-	5m	type 1
DSF EH10.19 SHV Ex-ATEX	374Z-05887	5/8"-18UNF-2A	-	-	2m	type 1
DSF EH10.20 SHV Ex-ATEX	3742606606	5/8"-18UNF-2A	-	-	5m	type 1

(1) Identical industry standard 97- series connectors are used instead of MS- connectors with same T_{max}=125°C

(2) Mating connector for cable diameter 3.1...4.1mm, other diameters on request

(3) The limitations relating to permissible cable capacitance and inductance detailed in the EU-Type-Examination Certificate under Ex power supply and instrumentation Ex input must be adhered to!

TABLE 3:
Description of the maximum allowed ambient temperature dependent on the Ex-category (G / D) and the connection type

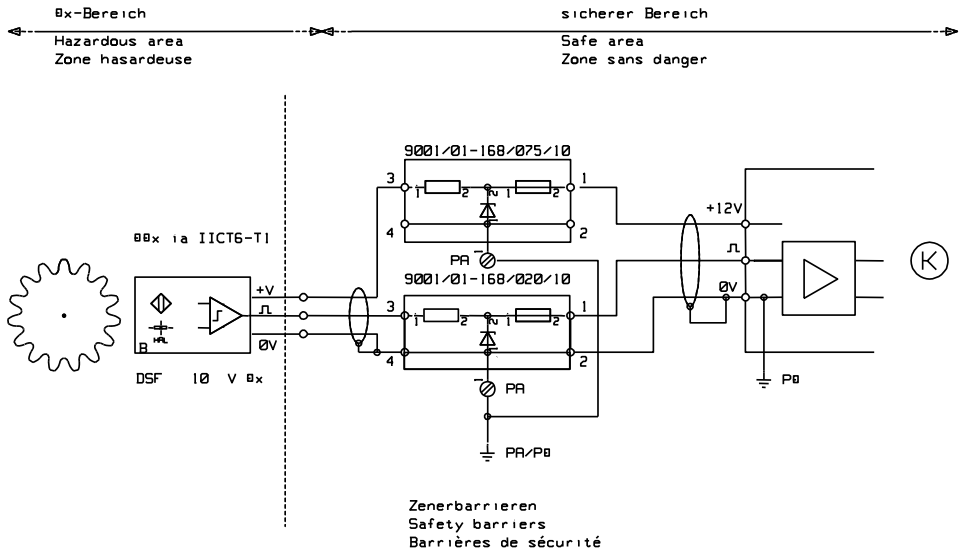
Ambient temperature range	Connection type	Ambient temperature (gas) (4)	Ambient temperature (dust)	Marking
type 1	S/S2 cable	-20°C ... =>	-20 ... +100°C	<Ex> II 2 G Ex ia IIC T6-T1 Gb <Ex> II 2 D Ex ia IIIC T135°C Db
type 2	S/S2 cable	-65°C ... =>	-65 ... +100°C	<Ex> II 2 G Ex ia IIC T6-T1 Gb <Ex> II 2 D Ex ia IIIC T135°C Db
type 3	A connector	-65°C ... =>	-65 ... +100°C	<Ex> II 2 G Ex ia IIC T6-T1 Gb <Ex> II 2 D Ex ia IIIC T135°C Db

(4) The temperature and atmosphere limitations for each sensor housing size, as shown in the table, must be observed and the restrictions given in the EU-Type-Examination Certificate must be adhered to.

Connection method:

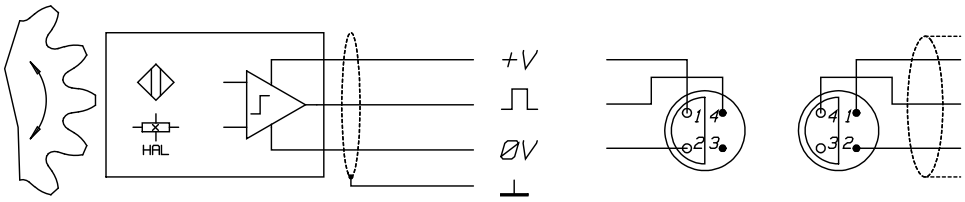
Version AH	Connector per TABLE 2.
Version SH	**ETFE/FEP cable**, Art.-Nr. 824L-35053, 4-pole, 4 x 0.24 mm² (AWG 24), screened wires (mesh screen, isolated from housing), white outer shell Ø max. 4.0 mm, bending radius min. 60 mm, weight 32 g/m. **The brown wire is not used.**
Version S2H	**Silicone cable,** Art-Nr. 824L-36622, 6-pole, 6 x 0.6 mm² (AWG 20), screened wires (mesh screen, isolated from housing), black outer shell Ø max. 13.0 mm, bending radius min. 30 mm, weight 200 g/m. **The brown, blue and orange wires are not used.**

Connection using Zener barriers (example):

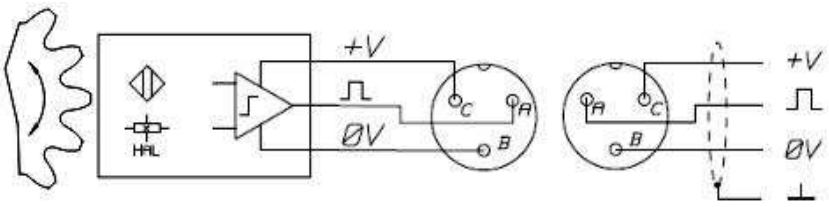


Connection diagrams (refer to dimensional drawing for exact type):

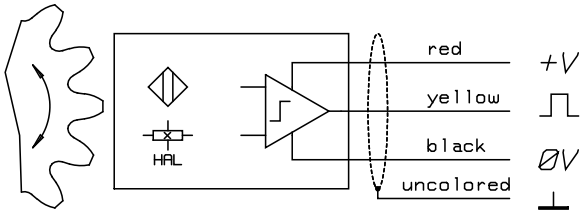
- ***Sensor types DSF xx10.00 AHV Ex-ATEX:***



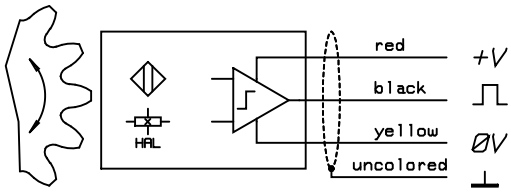
- ***Sensor types DSF xx10.02 AHV Ex-ATEX (for reference only, colors of wires may be different, check dimensional drawings):***



- ***Sensor types DSF xx10.0x SHV Ex-ATEX und DSF xx10.0x S2HV Ex-ATEX (for reference only, colors of wires may be different, check dimensional drawings):***



- ***Sensor type DSF 2210.87 SHV Ex-ATEX (for reference only, colors of wires may be different, check dimensional drawings):***



JAQUET A PART OF TE CONNECTIVITY	Formular QM 5.F9 Rev. 5: **Konformitätserklärung**	Ersteller: RW	Freigabe: TBA	Datum: 10/2021

EU Declaration of Conformity

(in accordance with ISO/IEC 17050-1)

We,

JAQUET Technology Group AG Kunimattweg 14 CH-4133 Pratteln	

certify and declare under our sole responsibility that the following product(s)

Hall Effect Single Channel Speed Sensor
DSF xx10.xx xHV Ex-Atex

as delivered, are in conformity with the essential requirements of the following directives:

2014/30/EU	**Electromagnetic compatibility (EMC)**
2014/34/EU	**ATEX Directive**

Conformity to the directives is assured through the application of the following harmonized standards:

EN 60079-0:2018 (IEC 60079-0:2018)	Explosive atmospheres – Part 0: Equipment – General requirements
EN 60079-11:2012 (IEC 60079-11:2011)	Explosive atmospheres – Part 11: Equipment protection by intrinsic safety "i"
EN 61000-6-2:2005/AC:2005 (IEC 61000-6-2:2005)	Immunity standard for industrial environments
EN 61000-6-4:2007/A1:2011 (IEC 61000-6-4:2006)	Emission standard for industrial environments

The Notified Body CSA Group Netherlands B.V., No 2813, issued the following EU-type examination certificate: **ZELM 03 ATEX 0124 X**

Additional European and international standards are applicable:

EN 61000-4-2/3/4/5/6/8/11	EMC standards
EN ISO 9001:2015	Quality Management Systems

Pratteln, 15.10.2021

R.Allais
Engineering & Technology Manager

P.Muller
Head of Quality Department

www.te.com Tel.: +41 61 306 88 22

1 **EU-TYPE EXAMINATION CERTIFICATE**

2 Equipment intended for use in Potentially Explosive Atmospheres Directive 2014/34/EU

3 Certificate Number: **ZELM 03ATEX0124X** Issue: **6**

4 Equipment: **Rotation Speed Sensor, Type DSF .. 10.** .HV Ex**

5 Applicant: **Jaquet Technology Group AG**

6 Address: Kunimattweg 14
CH-4133 Pratteln
Switzerland

7 This equipment and any acceptable variation thereto is specified in the schedule to this certificate and the documents therein referred to.

8 CSA Group Netherlands B.V., notified body number 2813 in accordance with Articles 17 and 21 of Directive 2014/34/EU of the European Parliament and of the Council, dated 26 February 2014, certifies that this equipment has been found to comply with the Essential Health and Safety Requirements relating to the design and construction of equipment intended for use in potentially explosive atmospheres given in Annex II to the Directive.

The examination and test results are recorded in the confidential reports listed in Section 14.2.

9 Compliance with the Essential Health and Safety Requirements, with the exception of those listed in the schedule to this certificate, has been assured by compliance with the following documents:

EN IEC 60079-0:2018 EN 60079-11:2012

10 If the sign 'X' is placed after the certificate number, it indicates that the equipment is subject to Specific Conditions of Use identified in the schedule to this certificate.

11 This EU-Type Examination Certificate relates only to the design and construction of the specified equipment. If applicable, further requirements of this Directive apply to the manufacture and supply of this equipment.

12 The marking of the equipment shall include the following:

II 2G
II 2D
Ex ia IIC T6 - T1 Gb
Ex ia IIIC T 135 °C Db

Project Number 80078904

Signed: J A May

Title: Director of Operations

CSA Group Netherlands B.V.
Utrechtseweg 310, Building B42,
6812AR, Netherlands

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SCHEDULE

EU-TYPE EXAMINATION CERTIFICATE **ZELM 03ATEX0124X**
Issue 6

13 **DESCRIPTION OF EQUIPMENT**

General product information:

The rotation speed sensors DSF..10.xx xHV Ex are used for the recording of the rotation speed for the touchless scanning of rotating ferromagnetic rotating magnetic poles, gears, camshafts and the like.

Information about the device:

Type code:

Speed sensor Type DSF ..10.** . HV Ex

- Version with permanently connected connection cable
  - S = Teflon cable or
  - S2= Silicon cable or
  - A = Version with connector
- differences of non-safety-related version
- thread size : 12 = M12 to 32 = M32 or AB = ½" CD = ¾" EH = 5/8" –18 UNF

Technical data:

Supply and Signal circuit

in type of protection intrinsic safety Ex ia IIC or IIB or ia IIIC when used in accordance with category 2D

only for connection to certified intrinsically safe circuits

maximum values: U_i =28 V
I_i =150 mA
P_i= 550 mW (at category 2D) or
$P_i \leq$ 900 mW (according to Table 1 at category 2G)

Maximum effective internal capacity C_i = 36nF
The maximum effective internal inductance is negligibly small.

In addition to the maximum values for effective internal capacitance and inductance stated above, for connecting cables longer than 5 m, the following maximum capacitance and inductance must be taken into account:

C_i = 240 pF/m
L_i = 1,5 µH/m

CSA Group Netherlands B.V.
Utrechtseweg 310, Building B42,
6812AR, Netherlands

SCHEDULE

EU-TYPE EXAMINATION CERTIFICATE **ZELM 03ATEX0124X**
Issue 6

The lower temperature limit is -20°C respective -65°C (see Specific Conditions of Use) for all other versions and applications.

For use according to category 2D the maximum permissible temperature is limited to 100°C.

The maximum permissible ambient temperatures as a function of the input power and the temperature class are given in the following table:

		Maximum ambient temperature(°C) for the temperature classes					
Type	P_i [mW]	T1	T2	T3	T4	T5	T6
DSF 1210... to DSF 1610... and DSF AB10.. DSF EH10..	900	125	125	125	75	40	25
	630	125	125	125	90	55	40
	525	125	125	125	97	62	47
	490	125	125	125	100	65	50
	399	125	125	125	105	70	55
	300	125	125	125	111	75	60
	200	125	125	125	117	82	67
	100	125	125	125	123	88	73
	50	125	125	125	125	91	76
DSF 1710... to DSF 2010... and DSF CD10..	900	125	125	125	91	56	41
	630	125	125	125	103	68	53
	525	125	125	125	107	72	57
	490	125	125	125	109	74	59
	399	125	125	125	113	78	63
	300	125	125	125	117	82	67
	200	125	125	125	121	86	71
	100	125	125	125	125	91	76
	50	125	125	125	125	93	78
DSF 2110... to DSF 3210...	900	125	125	125	89	54	39
	630	125	125	125	101	66	51
	525	125	125	125	106	71	56
	490	125	125	125	108	73	58
	399	125	125	125	112	77	62
	300	125	125	125	116	81	66
	200	125	125	125	121	86	71
	100	125	125	125	125	90	75
	50	125	125	125	125	93	78

Variation 1 - This variation introduced the following changes:

i. Standards update from EN 60079-0:2012 + A11:2013 to EN IEC 60079-0:2018 + AC:2020-02.
ii. Change of the Notified Body number.

CSA Group Netherlands B.V.
Utrechtseweg 310, Building B42,
6812AR, Netherlands

SCHEDULE

EU-TYPE EXAMINATION CERTIFICATE **ZELM 03ATEX0124X**
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14 DESCRIPTIVE DOCUMENTS

14.1 Drawings

Refer to Certificate Annexe.

14.2 Associated Sira Reports and Certificate History

Issue	Date	Report number	Comment
0	16 June 2003	ZELM Ex 0370215173	The release of the prime certificate.
1	26 September 2006	ZELM Ex 1120617487	The introduction of Issue 1, changes detailed in the report.
2	03 March 2009	ZELM Ex 0280926677	The introduction of Issue 2, changes detailed in the report.
3	30 July 2009	ZELM Ex 1000919714	The introduction of Issue 3, changes detailed in the report.
4	15 July 2015	ZELM Ex 07414131091	The introduction of Issue 4, changes detailed in the report.
5	04 June 2018	17PP348-01_1	The introduction of Issue 5, changes detailed in the report.
6	27 September 2021	R80078904C	This Issue covers the following changes: • Transfer of certificate ZELM 03ATEX0124X from KIWA Nederland B.V. to CSA Group Netherlands B.V.. • The introduction of Variation 1.

15 SPECIFIC CONDITIONS OF USE (denoted by X after the certificate number)

15.1 The speed sensors may only be operated in intrinsically safe circuits as specified in this EU-Type Examination Certificate.

15.2 The permissible ambient temperature range shall be determined in accordance with the provisions of this EU-Type Examination Certificate.

15.3 The operating instructions have to be observed.

15.4 For applications with a lower temperature limit of -65 ° C to -20 ° C, care should be taken when installing the sensors to avoid mechanical stress on the housing and cable.

15.5 Speed sensors having an exposed potting surface shall be installed in a way that the free surface of the casting compound is protected from mechanical impacts. This can be achieved by installing the sensor in the wall of an IP20 rated enclosure so that the connection side ensures IP20 protection, or if the installation ensures in another suitable manner that there are no mechanical impacts or impacts on the potting surface or on the potting surface edge of the sensor housing are possible.

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EU-TYPE EXAMINATION CERTIFICATE **ZELM 03ATEX0124X**
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16 **ESSENTIAL HEALTH AND SAFETY REQUIREMENTS OF ANNEX II** (EHSRs)

The relevant EHSRs that are not addressed by the standards listed in this certificate have been identified and individually assessed in the reports listed in Section 14.2.

17 **CONDITIONS OF MANUFACTURE**

17.1 The use of this certificate is subject to the Regulations Applicable to Holders of CSA Certificates.

17.2 Holders of EU-Type Examination Certificates are required to comply with the conformity to type requirements defined in Article 13 of Directive 2014/34/EU.

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Certificate Annexe

Certificate Number: **ZELM 03ATEX0124X**
Equipment: **Rotation Speed Sensor, Type DSF .. 10.** .HV Ex**
Applicant: **Jaquet Technology Group AG**

Issue 0 to **Issue 5** - refer to the report stated in Section 14.2.

Issue 6

Drawing	Sheets	Rev.	Drw. Date	Date (Stamp)	Title
160621-ATEX	1 of 1	-	16.06.2021	12 Jul 21	ATEX Markings General overview Jaquet Technology Group AG
115555	1 of 1	7	18.03.2021	12 Jul 21	Single Channel Hall Effect Speed Sensor DSF 2210.05 AHV Ex-ATEX

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6812AR, Netherlands

IECEx Certificate of Conformity

INTERNATIONAL ELECTROTECHNICAL COMMISSION
IEC Certification Scheme for Explosive Atmospheres

for rules and details of the IECEx Scheme visit www.iecex.com

Certificate No.: IECEx PTZ 18.0007X

Issue No: 0

Certificate history:
Issue No. 0 (2018-06-07)

Status: **Current**

Page 1 of 4

Date of Issue: **2018-06-07**

Applicant: **JAQUET Technology Group AG**
Kunimattweg 14
4133 Pratteln
Switzerland

Equipment: **Rotation speed sensor type DSF..10.**.HV Ex**
Optional accessory:

Type of Protection: **Intrinsic safety "i"**

Marking:
Ex ia IIC T6 -T1 Gb
Ex ia IIIC T135°C Db

Approved for issue on behalf of the IECEx Certification Body: Tanja Rottach

Position: Member of Certification department

Signature:
(for printed version)

Date: 2018-06-07

1. This certificate and schedule may only be reproduced in full.
2. This certificate is not transferable and remains the property of the issuing body.
3. The Status and authenticity of this certificate may be verified by visiting the Official IECEx Website.

Certificate issued by:

Primara Test und Zertifizier GmbH
Gewerbestraße 28
87600 Kaufbeuren
Germany

IECEx Certificate of Conformity

Certificate No: IECEx PTZ 18.0007X Issue No: 0

Date of Issue: **2018-06-07** Page 2 of 4

Manufacturer: **JAQUET Technology Group AG**
Kunimattweg 14
4133 Pratteln
Switzerland

Additional Manufacturing location(s):

This certificate is issued as verification that a sample(s), representative of production, was assessed and tested and found to comply with the IEC Standard list below and that the manufacturer's quality system, relating to the Ex products covered by this certificate, was assessed and found to comply with the IECEx Quality system requirements. This certificate is granted subject to the conditions as set out in IECEx Scheme Rules, IECEx 02 and Operational Documents as amended.

STANDARDS:

The apparatus and any acceptable variations to it specified in the schedule of this certificate and the identified documents, was found to comply with the following standards:

IEC 60079-0 : 2017 Explosive atmospheres - Part 0: Equipment - General requirements
Edition:7.0

IEC 60079-11 : 2011 Explosive atmospheres - Part 11: Equipment protection by intrinsic safety "i"
Edition:6.0

*This Certificate **does not** indicate compliance with electrical safety and performance requirements other than those expressly included in the Standards listed above.*

TEST & ASSESSMENT REPORTS:

A sample(s) of the equipment listed has successfully met the examination and test requirements as recorded in

Test Report:

DE/PTZ/ExTR18.0008/00

Quality Assessment Report:

DE/ZLM/QAR13.0002/03

IECEx Certificate of Conformity

Certificate No: IECEx PTZ 18.0007X Issue No: 0

Date of Issue: **2018-06-07** Page 3 of 4

Schedule

EQUIPMENT:

Equipment and systems covered by this certificate are as follows:

The rotation speed sensors DSF ..10.** . HV Ex are used for the recording of the rotation speed for the touchless scanning of rotating ferromagnetic rotating magnetic poles, gears, camshafts and the like.

Refer to Annex for details.

SPECIFIC CONDITIONS OF USE: YES as shown below:

Refer to Annex for details.

IECEx Certificate of Conformity

Certificate No:	IECEx PTZ 18.0007X	Issue No: 0
Date of Issue:	**2018-06-07**	Page 4 of 4

Additional information:

Annex:

Attachment to IECEx PTZ 18.0007X and ExTR18.0008.pdf

primara Test- und Zertifizier-GmbH

Attachment to DE/PTZ/ExTR18.0008/00 and IECEx PTZ 18.0007 issue 0

Date of Issue: 2018-06-07

The rotation speed sensors DSF ..10.xx xHV Ex are used for the recording of the rotation speed for the touchless scanning of rotating ferromagnetic rotating magnetic poles, gears, camshafts and the like.

Type code:

Speed sensor Type DSF ..10.** .HV Ex

- Version with permanently connected connection cable
  - S = Teflon cable or
  - S2= Silicon cable or
  - A = Version with connector
- differences of non-safety-related version
  - thread size : 12 = M12 to 32 = M32 or AB = ½" CD = ¾" EH = 5/8" –18 UNF

Technical data:

Supply and Signal circuit

in type of protection intrinsic safety Ex ia IIC or IIB or ia IIIC when used in accordance with EPL Db

only for connection to certified intrinsically safe circuits

maximum values:
U_i = 28 V
I_i = 150 mA
P_i = 550 mW (at EPL Db) or
$P_i \leq$ 900 mW (according to Table 1 at EPL Gb)

Maximum effective internal capacity C_i = 36nF
The maximum effective internal inductance is negligibly small.

In addition to the maximum values for effective internal capacitance and inductance stated above, for connecting cables longer than 5 m, the following maximum capacitance and inductance must be taken into account:

C_i = 240 pF/m
L_i = 1,5 µH/m

The lower temperature limit is -20°C respective -65°C (see Specific Conditions of Use) for all other versions and applications.

For use according to EPL Db the maximum permissible temperature is limited to 100°C.

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Attachment to:
DE/PTZ//ExTR18.0008/00 and IECEx PTZ 18.0007X issue 0

primara Test- und Zertifizier-GmbH

The maximum permissible ambient temperatures as a function of the input power and the temperature class are given in the following table:

Type	P_i [mW]	maximum ambient temperature(°C) for the temperature classes T1	T2	T3	T4	T5	T6
DSF 1210... to DSF 1610... and DSF AB10.. DSF EH10..	900	125	125	125	75	40	25
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Specific conditions of use:

1. The speed sensors may only be operated in intrinsically safe circuits as specified in this EU-Type Examination Certificate.
2. The permissible ambient temperature range shall be determined in accordance with the provisions of this EU-Type Examination Certificate.
3. The operating instructions must be observed.
4. For applications with a lower temperature limit of -65 ° C to -20 ° C, care should be taken when installing the sensors to avoid mechanical stress on the housing and cable.
5. Speed sensors having an exposed potting surface shall be installed in a way that the free surface of the casting compound is protected from mechanical impacts. This can be achieved by installing the sensor in the wall of an IP20 rated enclosure so that the connection side ensures IP20 protection, or if the installation ensures in another suitable manner that there are no mechanical impacts or impacts on the potting surface or on the potting surface edge of the sensor housing are possible.

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Primara Test- und Zertifizier-GmbH | Gewerbestraße 28 | 87600 Kaufbeuren | Germany | www.primara.net

NORTH AMERICA
Tel +1 800 522 6752
wema_us_orders@te.com

EUROPE
Tel +31 73 624 6999
tess-ic-tlse@te.com

ASIA
Tel +86 0400 820 6015
customercare.shzn@te.com

te.com/sensors

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