Translation

1 # EU-Type Examination Certificate

2 **Equipment intended for use in potentially explosive atmospheres Directive 2014/34/EU**

3 EU-Type Examination Certificate Number: **BVS 20 ATEX E 052 X**

4 Product: **Motor pump type T/FKT 20.2*-*/***Ex-****

5 Manufacturer: **WILO SE**

6 Address: **Wilopark 1, 44263 Dortmund, Germany**

7 This product and any acceptable variations thereto are specified in the appendix to this certificate and the documents referred to therein.

8 DEKRA Testing and Certification GmbH, Notified Body number 0158, in accordance with Article 17 of Directive 2014/34/EU of the European Parliament and of the Council, dated 26 February 2014, certifies that this product has been found to comply with the Essential Health and Safety Requirements relating to the design and construction of products 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. BVS PP 20.2080 EU.

9 The Essential Health and Safety Requirements are assured in consideration of:

EN IEC 60079-0:2018	**General requirements**
EN 60079-1:2014	**Flameproof enclosure "d"**

10 If the sign "X" is placed after the certificate number, it indicates that the product is subject to the Special Conditions for Use specified in the appendix to this certificate.

11 This EU-Type Examination Certificate relates only to the design and construction of the specified product. Further requirements of the Directive apply to the manufacturing process and supply of this product. These are not covered by this certificate.

12 The marking of the product shall include the following:

II 2G Ex db IIB T4/T3 Gb

DEKRA Testing and Certification GmbH
Bochum, 2020-09-04

Signed: Jörg-Timm Kilisch

Managing Director

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13 **Appendix**

14 **EU-Type Examination Certificate**

BVS 20 ATEX E 052 X

15 **Product description**

15.1 **Subject and type**

Motor type T/FKT[1] 20.2*[2]-*[3]/**[4]*[5]Ex-**[6]

[1] Motor version	T = Dry motor
	FKT = internal cooling
[2] Motor length	L = large
	M = medium
[3] Poles	f.e. 2, 4, 6, 8
[3] Packet length	f.e. 17,20,22,24,27,30,31,32,33
[4] mechanical Version	Specific model code G, K
[5] optional marking of efficiency class	Efficiency E0, E1, E2, E3, E4, E5 or E6, P0 ... P6

15.2 **Description**

The motor is intended as a drive for a submersible pump in type of protection Flameproof Enclosure "d".

It is equipped with 3 temperature limiters 160 °C in the winding head (asynchronous motor). Alternatively the motor is equipped with 3 temp 110 °C in the winding head (synchronous motor).

The motor is equipped with a double shaft seal. The interspace between these two seals can be monitored by an electrode. The electrode is not part of the explosion proof enclosure and it has to be connected to a separately tested intrinsically safe circuit. The intrinsic safety of the electrode and of this circuit is not a subject of this Type Examination Certificate.

15.3 **Parameters**

Rated voltage	200	up to	690	V
Rated frequency	50	/	60	Hz
Rated rotational speed	1140	/	3600	min^{-1}
Duty type:	S1 submerged, S2 15 min not submerged T-Type: intermittent operation surfaced FKT-Type: S1 not submerged			

T 20.2 with copper, permanent magnet or aluminum rotor:
Operation mode: S1 submerged / intermittent operation surfaced , S2 15 min not submerged

Motor type	Poles	Package length	f (Hz)	Max. power P1 (KW) for 40 °C	Max. power P1 (KW) for 60 °C
T 20.2	2	22	50	18.6	16.4
T 20.2	2	30	50	28	25
T 20.2	2	31*	50	25	22
T 20.2	4	20**	50	12.2	10.6
T 20.2	4	22	50	18.1	15.9
T 20.2	4	24**	50	16.4	14.2

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Motor type	Poles	Package length	f (Hz)	Max. power P1 (KW) for 40 °C	Max. power P1 (KW) for 60 °C
T 20.2	4	30	50	24	21
T 20.2	4	32**	50	24	20.5
T 20.2	4	33*	50	15.8	13.8
T 20.2	6	22	50	11.1	9.7
T 20.2	6	32	50	15.8	13.8
T 20.2	6	33*	50	11.6	10
T 20.2	8	17	50	6.1	5.2
T 20.2	8	22	50	8.4	7.3
T 20.2	8	32	50	11.6	10

* Copper-rotor **permanent magnet rotor

Motor type	Poles	Package length	f (Hz)	Max. power P1 (KW) for 40 °C	Max. power P1 (KW) for 60 °C
T 20.2	2	22	60	22	19.1
T 20.2	2	30	60	28	24
T 20.2	4	22	60	21.5	18.5
T 20.2	4	30	60	28	24.5
T 20.2	6	22	60	13.4	11.6
T 20.2	6	32	60	18.7	16.1
T 20.2	8	22	60	9.8	8.5
T 20.2	8	32	60	13.3	11.5

* Copper-rotor **permanent magnet rotor

FKT 20.2 with copper, permanent magnet or aluminium rotor:
Operation mode: S1 submerged / S1 not submerged

Motor type	Poles	Package length	f (Hz)	Max. power P1 (KW) for 40 °C	Max. power P1 (KW) for 60 °C
FKT 20.2	2	17	50	13.8	12.2
FKT 20.2	2	22	50	18.6	16.3
FKT 20.2	2	30	50	28	25
FKT 20.2	2	31*	50	25.5	22.5
FKT 20.2	4	17	50	8.9	7.9
FKT 20.2	4	20**	50	12.4	10.8
FKT 20.2	4	22	50	13	11.4
FKT 20.2	4	24**	50	16.7	14.5
FKT 20.2	4	27	50	17.7	15.4
FKT 20.2	4	30	50	11.7	10.2
FKT 20.2	4	31	50	24	20,5
FKT 20.2	4	32**	50	24.5	21
FKT 20.2	4	33*	50	15.8	13.8
FKT 20.2	6	17	50	8.8	7.6
FKT 20.2	6	22	50	11.1	9.7
FKT 20.2	6	32	50	15.8	13.8
FKT 20.2	6	33*	50	11.6	10
FKT 20.2	8	17	50	6.1	5.2
FKT 20.2	8	22	50	8.4	7.3
FKT 20.2	8	32	50	11.6	10

* Copper-rotor **permanent magnet rotor

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Motor type	Poles	Package length	f (Hz)	Max. power P1 (KW) for 40 °C	Max. power P1 (KW) for 60 °C
FKT 20.2	2	17	60	15.7	13.8
FKT 20.2	2	22	60	22	19.1
FKT 20.2	2	30	60	27.5	24
FKT 20.2	4	17	60	8.9	7.9
FKT 20.2	4	22	60	13.6	11.9
FKT 20.2	4	27	60	20.5	17.9
FKT 20.2	4	31	60	25.5	22.5
FKT 20.2	6	17	60	9.8	8.8
FKT 20.2	6	22	60	13.4	11.8
FKT 20.2	6	32	60	18.7	16.3
FKT 20.2	8	17	60	7.1	6.1
FKT 20.2	8	22	60	9.8	8.5
FKT 20.2	8	32	60	13.3	11.5

1) The maximum permissible temperature of the water to be pumped complies with the respective maximum ambient temperature.

2) For the supply with a frequency converter the max. values given on the marking plate must not be exceeded. It is recommended to have a safety factor of 5-7 % from nominal load to reduce the temperature rise by converter feeding.

Electrical parameters (Converter)		
Maximum permitted input voltage	Rated voltage of the motor	V
Minimum switching frequency	4	kHz
Current limiting value	1.5 x I_N	
Maximum overload time / permitted time for operation below the minimum output frequency[2)]	60	s
Output frequency	Rated frequency of the motor or lower	Hz
If the motor runs with a converter, the converter is designed as intermediate circuit voltage converter with pulse width modulation		

2) The maximum overload time and the permitted time for operation below the minimum output frequency are in relation with a period of 10 minutes.

15.3.2	Thermal parameters			
15.3.2.1	Thermistor circuit			
	Rated voltage		7.5	V
15.3.2.2	Bimetal-thermostat circuits			
	Voltage		250	V
	Current		2.5	A
15.3.3	Float switch Leakage detector			
	Voltage	max.	150	V
	Current	max.	0.5	A
15.3.4	Single-electrode Leakage detector			
	Voltage	max.	30 (60	V_{res} V_{peak})
	Current	max.	5	mA
15.3.5	Max. permissible submersion depth		20	m
15.3.6	Ambient temperature range		-20 °C up to +40 / 60 °C	
15.3.7	Maximum temperature of the water to be pumped		+40 / 60 °C	

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16 **Report Number**

BVS PP 20.2080, as of 2020-09-04

17 **Special Conditions for Use**

17.1 The motor must be protected directly by Temperature sensors in the stator winding or in the coil end in connection with a functionally tested control unit, additional to the motor protection switch.

In case of supply by a frequency converter the temperature shall be controlled directly by Temperature sensors in the stator winding or in the coil end in connection with a functionally tested control unit. Alternatively, equipped with temperature sensors (bimetal thermostats (break contact, response temperature 160 °C (asynchronous motor) or 110°C (synchronous motor) in the stator winding.

17.2 The yield stress of the fasteners which are part of the flameproof enclosure has to be higher than 700 N/mm².

17.3 The dimensions of the flameproof joints are in parts other than the relevant minimum or maximum values of EN 60079-1:2014. For information on the dimensions of the flameproof joints contact the manufacturer.

17.4 For the use of the motor type * 20.2*- * /***Ex** in areas with gas group IIA or IIB, the max. enclosure paint thickness must be limited to max. 2 mm according table 9 (EN IEC 60079-0:2018).

17.5 The motor may only be allowed to operate with the frequency converter using pulse width modulation to keep the parameters according clause 15.3.1.

17.6 Before setting-up operation it has to be ensured that no inadmissible over voltage caused by converter supply may occur at the terminals of the motor does not exceed 3000 V. The insulating system of the motor may require an additional limitation of a periodic over voltage.

18 **Essential Health and Safety Requirements**

The Essential Health and Safety Requirements are covered by the standards listed under item 9.

19 **Drawings and Documents**

Drawings and documents are listed in the confidential report.

We confirm the correctness of the translation from the German original.
In the case of arbitration only the German wording shall be valid and binding.

DEKRA Testing and Certification GmbH
Bochum, 2020-09-04
BVS-Pz A20191088

Managing Director

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