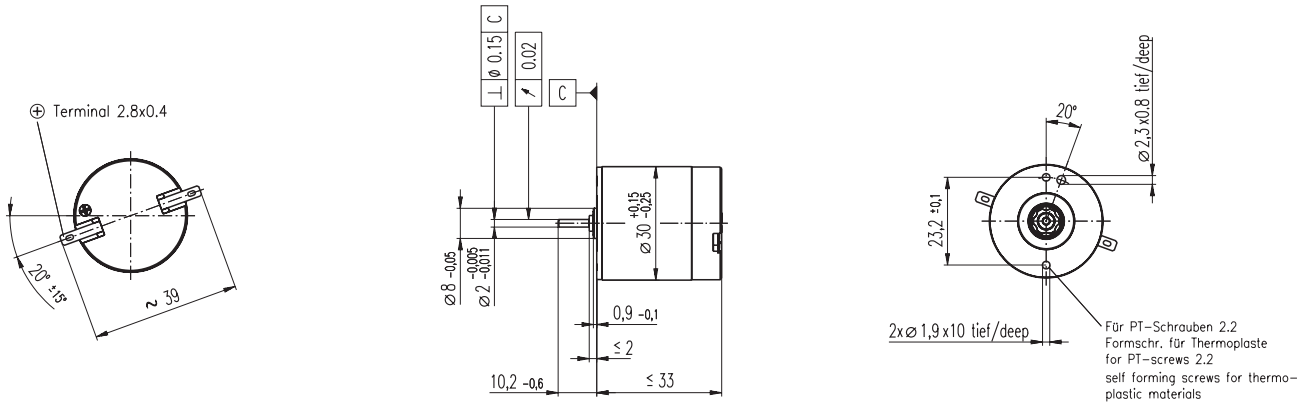


# F 2130 Ø30 mm, Graphite Brushes, 3 Watt, CE approved



M 1:2

- Stock program
- Standard program
- Special program (on request)

## Order Number

2130. ... -22.116-050 (Insert winding number)

Motor Data	Winding number	Order Number								
		900	903	904	905	906	907	908	910	
<b>Values at nominal voltage</b>										
1 Nominal voltage	V	3.0	6.0	6.0	9.0	12.0	12.0	15.0	24.0	
2 No load speed	rpm	4220	5260	4190	5470	6050	4920	4990	5140	
3 No load current	mA	56.5	31.2	23.5	20.9	17.5	13.5	10.9	6.96	
4 Nominal speed	rpm	987	2020	929	2200	2780	1600	1650	1760	
5 Nominal torque (max. continuous torque)	mNm	2.41	2.84	2.98	2.97	3.00	3.07	3.08	3.11	
6 Nominal current (max. continuous current)	A	0.544	0.332	0.276	0.230	0.189	0.157	0.127	0.0809	
7 Stall torque	mNm	3.52	5.01	4.10	5.31	5.87	4.81	4.85	4.96	
8 Starting current	A	0.725	0.540	0.353	0.380	0.341	0.228	0.185	0.120	
9 Max. efficiency	%	37	51	49	54	57	55	56	57	
<b>Characteristics</b>										
10 Terminal resistance	Ω	4.14	11.1	17.0	23.7	35.2	52.5	80.9	200	
11 Terminal inductance	mH	0.136	0.496	0.780	1.13	1.71	2.56	3.96	9.87	
12 Torque constant	mNm / A	4.85	9.27	11.6	14.0	17.2	21.0	26.2	41.3	
13 Speed constant	rpm / V	1970	1030	822	683	555	454	365	231	
14 Speed / torque gradient	rpm / mNm	1680	1230	1200	1160	1130	1130	1130	1120	
15 Mechanical time constant	ms	72.6	50.6	49.2	46.1	44.5	44.1	43.3	42.1	
16 Rotor inertia	gcm <sup>2</sup>	4.13	3.91	3.91	3.80	3.75	3.71	3.67	3.60	

## Specifications

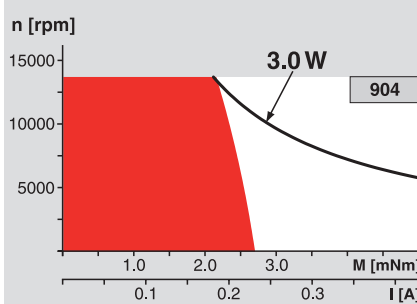
- Thermal data**
- 17 Thermal resistance housing-ambient 23.1 K / W
  - 18 Thermal resistance winding-housing 13.3 K / W
  - 19 Thermal time constant winding 22.1 s
  - 20 Thermal time constant motor 728 s
  - 21 Ambient temperature -20 ... +65°C
  - 22 Max. permissible winding temperature +85°C
- Mechanical data (sleeve bearings)**
- 23 Max. permissible speed 13600 rpm
  - 24 Axial play 0.15 - 0.25 mm
  - 25 Radial play 0.014 mm
  - 26 Max. axial load (dynamic) 0.4 N
  - 27 Max. force for press fits (static) 50 N
  - 28 Max. radial loading, 5 mm from flange 2.0 N
- Mechanical data (ball bearings)**
- 23 Max. permissible speed 13600 rpm
  - 24 Axial play 0.15 - 0.25 mm
  - 25 Radial play 0.025 mm
  - 26 Max. axial load (dynamic) 1.0 N
  - 27 Max. force for press fits (static) 24 N
  - 28 Max. radial loading, 5 mm from flange 5 N
- Other specifications**
- 29 Number of pole pairs 1
  - 30 Number of commutator segments 7
  - 31 Weight of motor 63 g

Values listed in the table are nominal.  
Explanation of the figures on page 49.

### Option

Ball bearings in place of sleeve bearings

## Operating Range



## Comments

**Continuous operation**  
In observation of above listed thermal resistance (lines 17 and 18) the maximum permissible winding temperature will be reached during continuous operation at 25°C ambient.  
= Thermal limit.

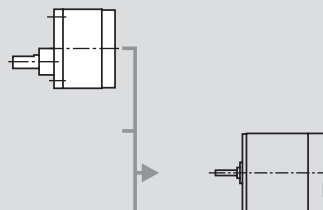
**Short term operation**  
The motor may be briefly overloaded (recurring).

— Assigned power rating

## maxon Modular System

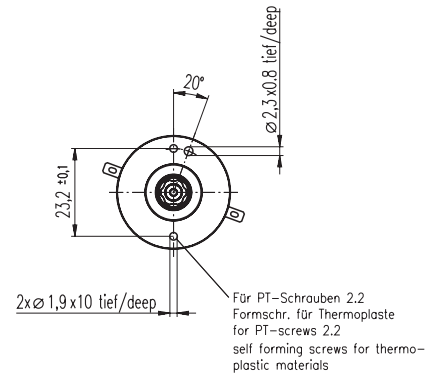
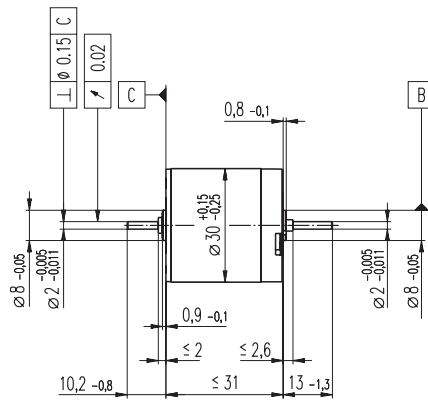
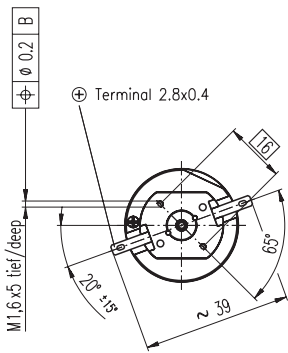
Overview on page 16 - 21

**Spur Gearhead**  
Ø30 mm  
0.07 - 0.2 Nm  
Page 236



**Recommended Electronics:**  
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Notes 18

# F 2130 Ø30 mm, Graphite Brushes, 3 Watt, CE approved



## M 1:2

- Stock program
- Standard program
- Special program (on request)

### Order Number

2130. ... -57.236-050 (Insert winding number)

Motor Data	Winding number	Order Number									
		900	903	904	905	906	907	908	910		
<b>Values at nominal voltage</b>											
1 Nominal voltage	V	3.0	6.0	6.0	9.0	12.0	12.0	15.0	24.0		
2 No load speed	rpm	4060	5150	4080	5380	5970	4830	4910	5050		
3 No load current	mA	72.2	38.7	30.2	25.7	21.1	16.9	13.6	8.65		
4 Nominal speed	rpm	987	2030	929	2210	2790	1610	1650	1770		
5 Nominal torque (max. continuous torque)	mNm	2.31	2.73	2.87	2.87	2.89	2.96	2.98	3.00		
6 Nominal current (max. continuous current)	A	0.544	0.331	0.276	0.230	0.188	0.157	0.127	0.0808		
7 Stall torque	mNm	3.52	5.01	4.10	5.31	5.87	4.81	4.85	4.96		
8 Starting current	A	0.725	0.540	0.353	0.380	0.341	0.228	0.185	0.120		
9 Max. efficiency	%	32	46	44	50	53	50	51	52		
<b>Characteristics</b>											
10 Terminal resistance	Ω	4.14	11.1	17.0	23.7	35.2	52.5	80.9	200		
11 Terminal inductance	mH	0.136	0.496	0.780	1.13	1.71	2.56	3.96	9.87		
12 Torque constant	mNm / A	4.85	9.27	11.6	14.0	17.2	21.0	26.2	41.3		
13 Speed constant	rpm / V	1970	1030	822	683	555	454	365	231		
14 Speed / torque gradient	rpm / mNm	1680	1230	1200	1160	1130	1130	1130	1120		
15 Mechanical time constant	ms	72.6	50.6	49.2	46.1	44.5	44.1	43.3	42.1		
16 Rotor inertia	gcm <sup>2</sup>	4.13	3.91	3.91	3.80	3.75	3.71	3.67	3.60		

### Specifications

- Thermal data**
- 17 Thermal resistance housing-ambient 23.1 K / W
  - 18 Thermal resistance winding-housing 13.3 K / W
  - 19 Thermal time constant winding 22.1 s
  - 20 Thermal time constant motor 728 s
  - 21 Ambient temperature -20 ... +65°C
  - 22 Max. permissible winding temperature +85°C
- Mechanical data (ball bearings)**
- 23 Max. permissible speed 13600 rpm
  - 24 Axial play 0.05 - 0.15 mm
  - 25 Radial play 0.025 mm
  - 26 Max. axial load (dynamic) 1.0 N
  - 27 Max. force for press fits (static) (static, shaft supported) 24 N
  - 28 Max. radial loading, 5 mm from flange 5 N

### Other specifications

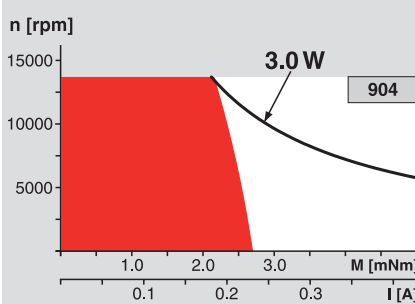
- 29 Number of pole pairs 1
- 30 Number of commutator segments 7
- 31 Weight of motor 63 g

Values listed in the table are nominal.  
Explanation of the figures on page 49.

### Option

Preloaded ball bearings

### Operating Range



### Comments

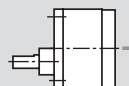
■ **Continuous operation**  
In observation of above listed thermal resistance (lines 17 and 18) the maximum permissible winding temperature will be reached during continuous operation at 25°C ambient.  
= Thermal limit.

**Short term operation**  
The motor may be briefly overloaded (recurring).

— **Assigned power rating**

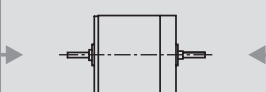
### maxon Modular System

**Spur Gearhead**  
Ø30 mm  
0.07 - 0.2 Nm  
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### Overview on page 16 - 21

**Encoder Enc**  
22 mm  
100 CPT, 2 channels  
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**Recommended Electronics:**  
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