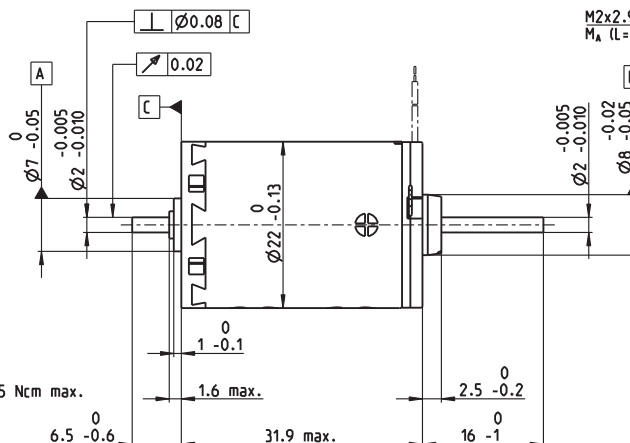
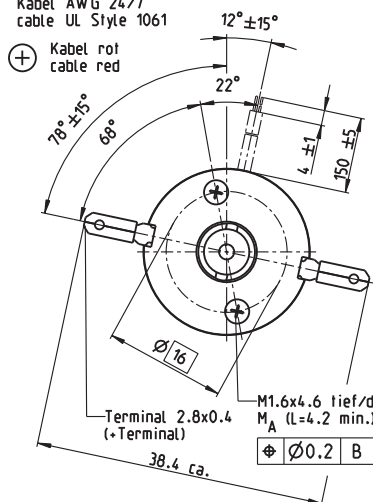


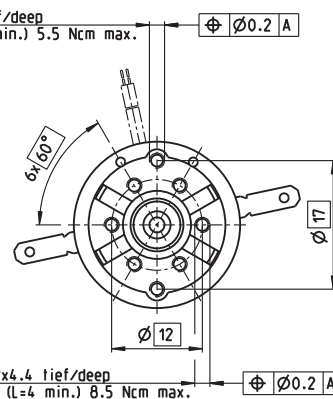
# A-max 22 Ø22 mm, Graphite Brushes, 6 Watt

Kabel AWG 24/7  
cable UL Style 1061

⊕ Kabel rot  
cable red



M2x2.9 tief/deep  
M\_A (L=2.5 min.) 5.5 Ncm max.



M 1:1

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

## Part Numbers

with terminals	110156	110158	110159	110160	110161	110162	110163	110164	110165	110166	110167	110168
with cables	139848	353023	353024	231171	353025	353026	231174	353027	353028	353029	316659	353603

## Motor Data

Values at nominal voltage		6	9	9	12	12	15	18	24	24	36	48	48
1	Nominal voltage	V	6	9	9	12	12	15	18	24	24	36	48
2	No load speed	rpm	9240	9690	8500	10200	9170	10000	9770	10500	8480	9630	9110
3	No load current	mA	83.1	57.9	49.6	45.8	40.5	36	29	23.7	18.4	14.2	9.99
4	Nominal speed	rpm	6240	6530	5350	7060	6000	6890	6600	7380	5270	6420	5840
5	Nominal torque (max. continuous torque)	mNm	5.91	6.88	7.04	6.96	6.95	6.93	6.92	6.9	6.97	6.86	6.75
6	Nominal current (max. continuous current)	A	1.08	0.859	0.77	0.681	0.613	0.534	0.432	0.347	0.283	0.21	0.147
7	Stall torque	mNm	19.4	22.1	19.8	23.7	20.9	22.9	22	23.7	18.9	21.1	19.2
8	Starting current	A	3.29	2.59	2.04	2.17	1.72	1.65	1.29	1.12	0.721	0.606	0.393
9	Max. efficiency	%	67	70	69	72	70	72	72	73	70	72	71
Characteristics													
10	Terminal resistance	Ω	1.82	3.48	4.42	5.53	6.96	9.09	14	21.5	33.3	59.4	122
11	Terminal inductance	mH	0.106	0.223	0.288	0.363	0.445	0.585	0.891	1.37	2.1	3.69	7.3
12	Torque constant	mNm/A	5.9	8.55	9.73	10.9	12.1	13.9	17.1	21.2	26.2	34.8	48.9
13	Speed constant	rpm/V	1620	1120	981	875	790	689	558	450	364	274	195
14	Speed / torque gradient	rpm/mNm	500	454	446	444	455	452	457	456	461	468	487
15	Mechanical time constant	ms	21.3	20.5	20.4	20.2	20.3	20.2	20.1	20.1	20.1	20.1	20.2
16	Rotor inertia	gcm <sup>2</sup>	4.07	4.32	4.37	4.36	4.26	4.27	4.2	4.2	4.16	4.09	3.97

## Specifications

Thermal data		
17	Thermal resistance housing-ambient	20 K/W
18	Thermal resistance winding-housing	6.0 K/W
19	Thermal time constant winding	9.43 s
20	Thermal time constant motor	313 s
21	Ambient temperature	-30...+85°C
22	Max. permissible winding temperature	+125°C

Mechanical data (sleeve bearings)		
23	Max. permissible speed	9800 rpm
24	Axial play	0.05 - 0.15 mm
25	Radial play	0.012 mm
26	Max. axial load (dynamic)	1 N
27	Max. force for press fits (static) (static, shaft supported)	80 N
28	Max. radial load, 5 mm from flange	240 N

Mechanical data (ball bearings)		
23	Max. permissible speed	9800 rpm
24	Axial play	0.05 - 0.15 mm
25	Radial play	0.025 mm
26	Max. axial load (dynamic)	3.3 N
27	Max. force for press fits (static) (static, shaft supported)	45 N
28	Max. radial load, 5 mm from flange	240 N

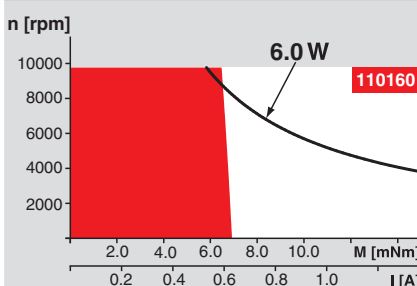
Other specifications		
29	Number of pole pairs	1
30	Number of commutator segments	9
31	Weight of motor	54 g

Values listed in the table are nominal.  
Explanation of the figures on page 79.

### 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

### Planetary Gearhead

Ø22 mm  
0.1 - 0.6 Nm  
Page 260/261

### Planetary Gearhead

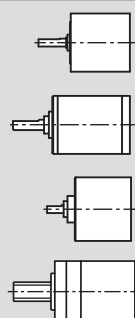
Ø22 mm  
0.5 - 2.0 Nm  
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### Spur Gearhead

Ø24 mm  
0.1 Nm  
Page 269

### Spindle Drive

Ø22 mm  
Page 299/300



### Recommended Electronics:

ESCON 36/2 DC	Page 342
ESCON Module 50/5	343
ESCON 50/5	344
EPOS2 24/2	350
EPOS2 Module 36/2	350
EPOS3 70/10 EtherCAT	357
MAXPOS 50/5	360
Notes	22

## Overview on page 20-25

### Encoder MR

32 CPT,  
2 / 3 channels  
Page 315

### Encoder MR

128 / 256 / 512 CPT,  
2 / 3 channels  
Page 317

### Encoder Enc

22 mm  
100 CPT, 2 channels  
Page 324

### Encoder MEnc

Ø13 mm  
16 CPT, 2 channels  
Page 335