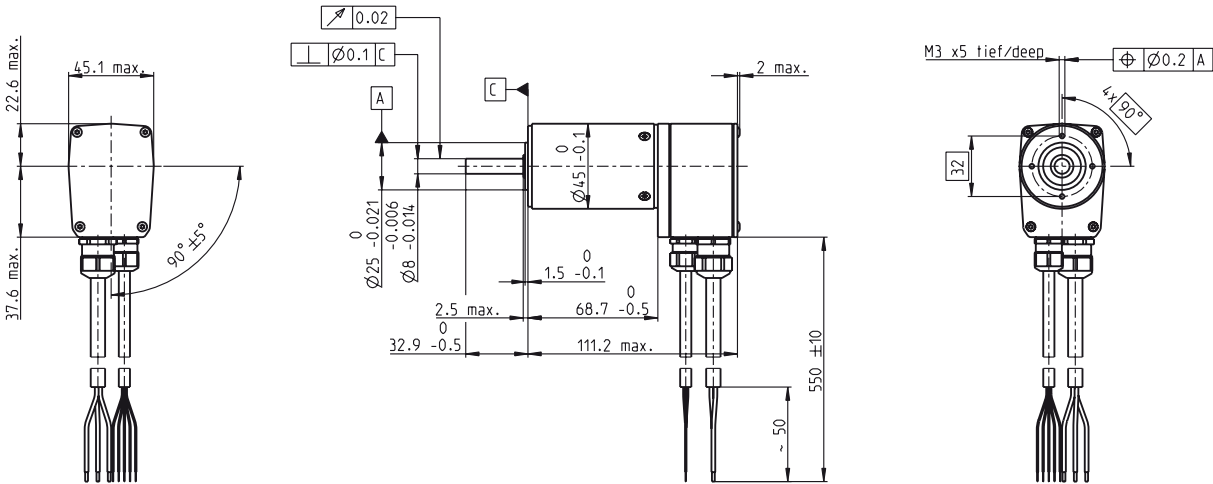


EC 45 Ø45 mm, brushless, 150 Watt, CE approved



M 1:4

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

Article Numbers

136202	136196	136203	136197	136204	136198	136205	136200	136206	136201
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Motor Data

Values at nominal voltage												
1	Nominal voltage	V	12	12	18	18	24	24	36	36	48	48
2	No load speed	rpm	9780	5650	10300	5930	10500	6090	9360	5400	10200	5860
3	No load current	mA	1530	577	1120	419	879	328	471	177	411	154
4	Nominal speed	rpm	8470	4380	9020	4690	9310	4840	8160	4190	8960	4640
5	Nominal torque (max. continuous torque)	mNm	167	184	168	183	167	182	179	191	173	187
6	Nominal current (max. continuous current)	A	15.6	9.53	11	6.68	8.46	5.11	5.27	3.14	4.2	2.51
7	Stall torque	mNm	1380	872	1540	931	1600	952	1560	911	1650	962
8	Starting current	A	119	43.6	93.3	32.6	74.8	25.6	43.1	14.5	37.2	12.5
9	Max. efficiency	%	79	79	80	79	80	79	81	80	81	80
Characteristics												
10	Terminal resistance phase to phase	Ω	0.101	0.275	0.193	0.552	0.321	0.936	0.836	2.48	1.29	3.85
11	Terminal inductance phase to phase	mH	0.0266	0.0797	0.0542	0.163	0.0917	0.275	0.263	0.788	0.395	1.19
12	Torque constant	mNm/A	11.5	20	16.5	28.6	21.4	37.1	36.3	62.8	44.5	77.1
13	Speed constant	rpm/V	827	478	579	334	445	257	263	152	214	124
14	Speed/torque gradient	rpm/mNm	7.22	6.58	6.78	6.46	6.67	6.49	6.07	6	6.22	6.18
15	Mechanical time constant	ms	8.99	8.19	8.44	8.05	8.32	8.08	7.56	7.48	7.75	7.7
16	Rotor inertia	gcm²	119	119	119	119	119	119	119	119	119	119

Specifications

- Thermal data**
 - 17 Thermal resistance housing-ambient 1.9 K/W
 - 18 Thermal resistance winding-housing 0.9 K/W
 - 19 Thermal time constant winding 15.4 s
 - 20 Thermal time constant motor 1600 s
 - 21 Ambient temperature -20...+100°C
 - 22 Max. permissible winding temperature +125°C
- Mechanical data (preloaded ball bearings)**
 - 23 Max. permissible speed 15000 rpm
 - 24 Axial play at axial load < 20 N 0 mm
 - 25 Radial play at axial load > 20 N max. 0.14 mm
 - 26 Max. axial load (dynamic) 16 N
 - 27 Max. force for press fits (static) 182 N
 - 28 Max. radial loading, 5 mm from flange 5000 N

Other specifications

- 29 Number of pole pairs 1
- 30 Number of phases 3
- 31 Weight of motor 850 g
- Protection to IP54*

Values listed in the table are nominal.

Connection motor (Cable AWG 16)

- Cable 1 Motor winding 1
- Cable 2 Motor winding 2
- Cable 3 Motor winding 3

Connection sensors (Cable AWG 24)¹⁾

- white Hall sensor 3
- brown Hall sensor 2
- green Hall sensor 1
- yellow GND
- grey V_{Hall} 4.5 ... 24 VDC

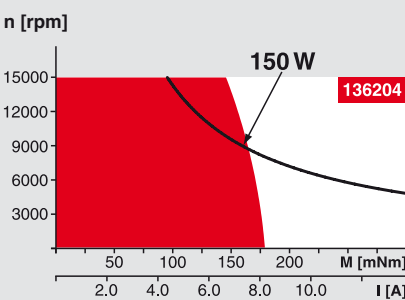
Wiring diagram for Hall sensors see p. 27

¹⁾ Not lead through in combination with resolver.

Option

Temperature monitoring, PTC resistance Micropille
110°C, R 25°C < 0.5 kΩ, R 105°C = 1.2...1.5 kΩ,
R 115°C = 7...13 kΩ, R 120°C = 18...35 kΩ

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**

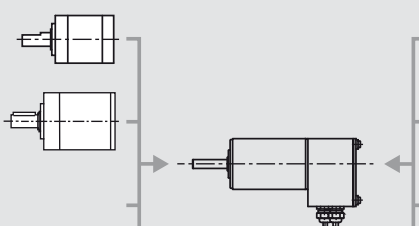
maxon Modular System

Planetary Gearhead

- Ø42 mm
- 3 - 15 Nm
- Page 242

Planetary Gearhead

- Ø52 mm
- 4 - 30 Nm
- Page 245



Recommended Electronics:

- ESCON 50/5 Page 292
- DECS 50/5 297
- DEC Module 50/5 299
- DEC 70/10 305
- DES 50/5, 70/10 306
- EPOS2 50/5, 70/10 313
- EPOS3 70/10 EtherCAT 319
- Notes 20

Overview on page 16 - 21

Encoder HEDL 9140

- 500 CPT,
- 3 channels
- Page 281

Resolver Res 26

- Ø26 mm
- 10 V
- Page 287

Brake AB 28

- 24 VDC
- 0.4 Nm
- Page 331

maxon EC motor

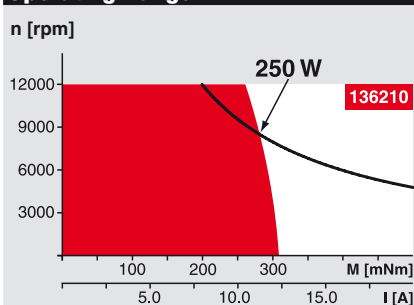


Article Numbers

136210	136207	136211	136208	136212	136209		

Specifications

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

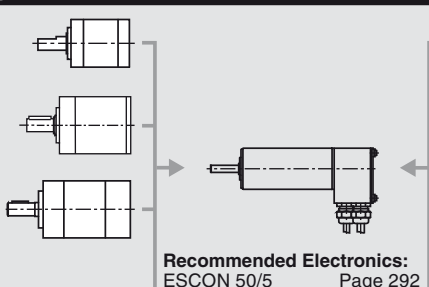
maxon Modular System

Overview on page 16 - 21

Planetary Gearhead
 Ø42 mm
 3 - 15 Nm
 Page 242

Planetary Gearhead
 Ø52 mm
 4 - 30 Nm
 Page 245

Planetary Gearhead
 Ø62 mm
 8 - 50 Nm
 Page 247



Recommended Electronics:	
ESCON 50/5	Page 29
DECS 50/5	29
DEC Module 50/5	29
DEC 70/10	30
DES 50/5, 70/10	30
EPOS2 50/5, 70/10	31
EPOS3 70/10 EtherCAT	31
Notes	20

Encoder HEDL 9140
500 CPT,
3 channels
Page 281

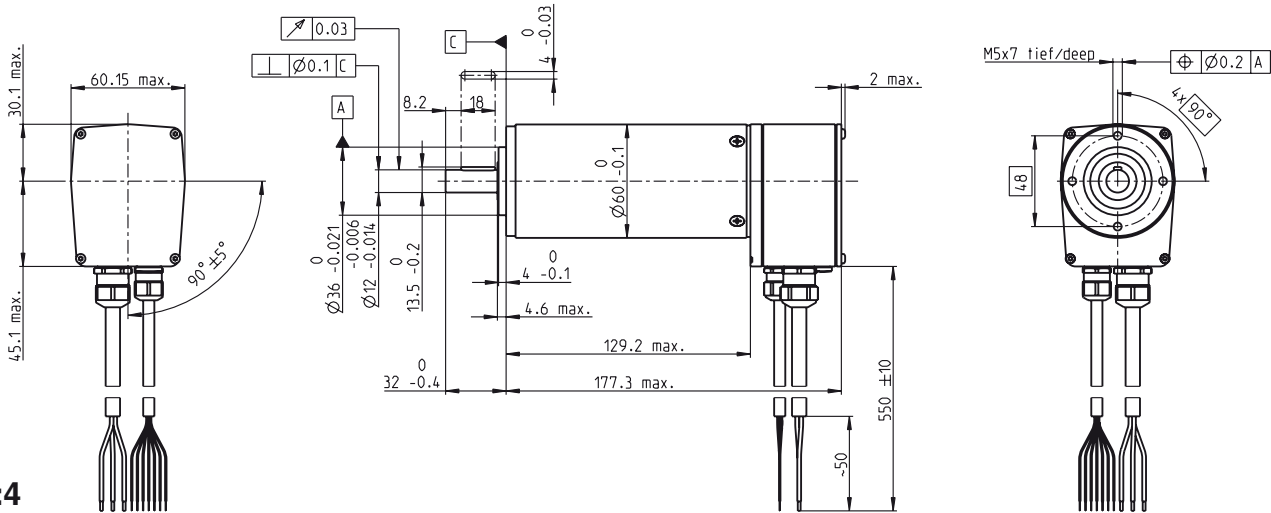
Resolver Res 26
Ø26 mm
10 V
Page 287

Brake AB 28
24 VDC
0.4 Nm
Page 331

*Protection level only when installed with flange-side seal

EC 60 Ø60 mm, brushless, 400 Watt, C€ approved

M 1:4



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

Article Numbers

167132 167131

Motor Data

Values at nominal voltage			
1 Nominal voltage	V	48	48
2 No load speed	rpm	5370	3100
3 No load current	mA	733	304
4 Nominal speed	rpm	4960	2680
5 Nominal torque (max. continuous torque)	mNm	747	830
6 Nominal current (max. continuous current)	A	9.38	5.85
7 Stall torque	mNm	11800	6820
8 Starting current	A	139	46.4
9 Max. efficiency	%	86	85
Characteristics			
10 Terminal resistance phase to phase	Ω	0.345	1.03
11 Terminal inductance phase to phase	mH	0.273	0.82
12 Torque constant	mNm/A	84.9	147
13 Speed constant	rpm/V	113	65
14 Speed/torque gradient	rpm/mNm	0.457	0.457
15 Mechanical time constant	ms	3.98	3.98
16 Rotor inertia	gcm ²	831	831

Specifications

- Thermal data**
- 17 Thermal resistance housing-ambient 1.3 K/W
 - 18 Thermal resistance winding-housing 0.5 K/W
 - 19 Thermal time constant winding 33.9 s
 - 20 Thermal time constant motor 1200 s
 - 21 Ambient temperature -20...+100°C
 - 22 Max. permissible winding temperature +125°C
- Mechanical data (preloaded ball bearings)**
- 23 Max. permissible speed 7000 rpm
 - 24 Axial play at axial load < 30 N 0 mm
 - 25 Radial play > 30 N max. 0.14 mm
 - 26 Max. axial load (dynamic) 24 N
 - 27 Max. force for press fits (static) 392 N
 - 28 Max. radial loading, 5 mm from flange 6000 N

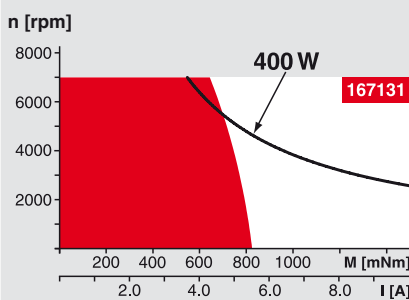
Other specifications

- 29 Number of pole pairs 1
 - 30 Number of phases 3
 - 31 Weight of motor 2450 g
 - Protection to IP54*
- Values listed in the table are nominal.
- Connection motor (Cable AWG 16)**
- Cable 1 Motor winding 1
 - Cable 2 Motor winding 2
 - Cable 3 Motor winding 3
- Connection sensors (Cable AWG 24)¹⁾**
- white Hall sensor 3
 - brown Hall sensor 2
 - green Hall sensor 1
 - yellow GND
 - grey V_{Hall} 4.5 ... 24 VDC
 - blue Temperature sensor (PTC)
 - pink Temperature sensor (PTC)

¹⁾ Not lead through in combination with resolver.

Temperature monitoring, PTC resistance Micropille
 110°C, R 25°C < 0.5 kΩ, R 105°C = 1.2...1.5 kΩ,
 R 115°C = 7...13 kΩ, R 120°C = 18...35 kΩ
 Wiring diagram for Hall sensors see p. 27

Operating Range



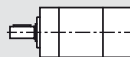
Comments

- 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

Ø81 mm
 20 - 120 Nm
 Page 248



Recommended Electronics:

- ESCON 50/5 Page 292
- DECS 50/5 297
- DEC Module 50/5 299
- DEC 70/10 305
- DES 50/5, 70/10 306
- EPOS2 70/10 313
- EPOS3 70/10 EtherCAT 319
- Notes 20

*Protection level only when installed with flange-side seal.

Overview on page 16 - 21

Encoder HEDL 9140

500 CPT,
 3 channels
 Page 281

Resolver Res

Ø26 mm
 10 V
 Page 287

Brake AB 41

24 VDC
 2.0 Nm
 Page 333