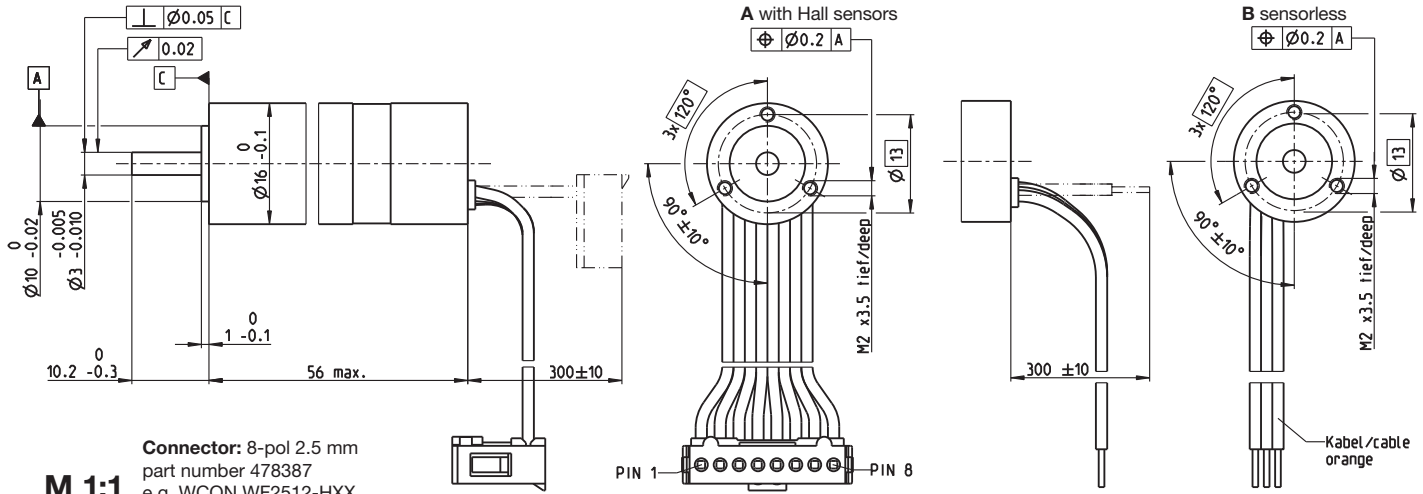


# EC 16 Ø16 mm, brushless, 60 Watt



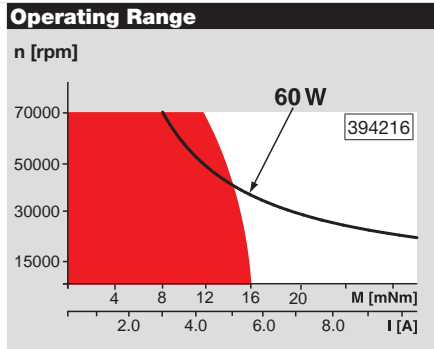
**M 1:1**  
 Connector: 8-pol 2.5 mm  
 part number 478387  
 e.g. WCON WF2512-HXX

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

		Part Numbers				
A with Hall sensors		394216	396916	395588	396928	405794
B sensorless		397162	397294	397292	397295	405795

Motor Data						
<b>Values at nominal voltage</b>						
1 Nominal voltage	V	12	18	24	32	48
2 No load speed	rpm	37100	43400	43400	43400	41700
3 No load current	mA	327	272	204	153	96.2
4 Nominal speed	rpm	32500	39200	39400	39500	37900
5 Nominal torque (max. continuous torque)	mNm	17.2	16.9	17	17	17.1
6 Nominal current (max. continuous current)	A	5.82	4.48	3.39	2.54	1.63
7 Stall torque	mNm	157	205	221	230	224
8 Stall current	A	51.4	52	42.2	32.8	20.5
9 Max. efficiency	%	85	86	87	87	87
<b>Characteristics</b>						
10 Terminal resistance phase to phase	$\Omega$	0.233	0.346	0.569	0.976	2.34
11 Terminal inductance phase to phase	mH	0.02	0.033	0.059	0.104	0.254
12 Torque constant	mNm/A	3.06	3.94	5.25	7	10.9
13 Speed constant	rpm/V	3120	2420	1820	1360	873
14 Speed/torque gradient	rpm/mNm	238	213	197	190	187
15 Mechanical time constant	ms	2.66	2.39	2.21	2.13	2.09
16 Rotor inertia	gcm <sup>2</sup>	1.07	1.07	1.07	1.07	1.07

- Specifications**
- Thermal data**
- 17 Thermal resistance housing-ambient: 10.3 K/W
  - 18 Thermal resistance winding-housing: 1.2 K/W
  - 19 Thermal time constant winding: 2.53 s
  - 20 Thermal time constant motor: 299 s
  - 21 Ambient temperature: -20...+100°C
  - 22 Max. winding temperature: 155°C
- Mechanical data (preloaded ball bearings)**
- 23 Max. speed: 70000 rpm
  - 24 Axial play at axial load < 3.5 N: 0 mm
  - > 3.5 N: max. 0.14 mm
  - 25 Radial play: preloaded
  - 26 Max. axial load (dynamic): 3 N
  - 27 Max. force for press fits (static) (static, shaft supported): 35 N
  - 28 Max. radial load, 5 mm from flange: 250 N
  - 10 N



**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**

- Other specifications**
- 29 Number of pole pairs: 1
  - 30 Number of phases: 3
  - 31 Weight of motor: 58 g
- Values listed in the table are nominal.
- Connection A**
- |        |                  |       |
|--------|------------------|-------|
| brown  | Motor winding 1  | Pin 1 |
| red    | Motor winding 2  | Pin 2 |
| orange | Motor winding 3  | Pin 3 |
| yellow | VHall 3...24 VDC | Pin 4 |
| green  | GND              | Pin 5 |
| blue   | Hall sensor 1    | Pin 6 |
| violet | Hall sensor 2    | Pin 7 |
| gray   | Hall sensor 3    | Pin 8 |
- Wiring diagram for Hall sensors see p. 35
- Connection B (Cable AWG 24)**
- |        |                 |
|--------|-----------------|
| brown  | Motor winding 1 |
| red    | Motor winding 2 |
| orange | Motor winding 3 |

**maxon Modular System** Overview on page 20-27

<p><b>Planetary Gearhead</b>                  Ø16 mm                  0.2 - 0.6 Nm                  Page 324</p> <p><b>Planetary Gearhead</b>                  Ø22 mm                  0.5 - 1.0 Nm                  Page 329</p> <p><b>Planetary Gearhead</b>                  Ø22 mm                  0.5 - 2.0 Nm                  Page 332</p> <p><b>Spindle Drive</b>                  Ø16/22 mm                  Page 365-369</p>		<p><b>Recommended Electronics:</b>                  Notes Page 26</p> <table border="0"> <tr><td>ESCON 36/3 EC</td><td>417</td></tr> <tr><td>ESCON Mod. 50/4 EC-S</td><td>417</td></tr> <tr><td>ESCON Module 50/5</td><td>417</td></tr> <tr><td>ESCON 50/5</td><td>418</td></tr> <tr><td>ESCON 70/10</td><td>418</td></tr> <tr><td>DEC Module 50/5</td><td>420</td></tr> <tr><td>EPOS2 24/2</td><td>424</td></tr> <tr><td>EPOS2 50/5</td><td>425</td></tr> <tr><td>EPOS2 70/10</td><td>425</td></tr> <tr><td>EPOS2 P 24/5</td><td>428</td></tr> <tr><td>EPOS4 Module 50/8</td><td>431</td></tr> <tr><td>EPOS4 Comp. 50/8 CAN</td><td>431</td></tr> <tr><td>MAXPOS 50/5</td><td>435</td></tr> </table>	ESCON 36/3 EC	417	ESCON Mod. 50/4 EC-S	417	ESCON Module 50/5	417	ESCON 50/5	418	ESCON 70/10	418	DEC Module 50/5	420	EPOS2 24/2	424	EPOS2 50/5	425	EPOS2 70/10	425	EPOS2 P 24/5	428	EPOS4 Module 50/8	431	EPOS4 Comp. 50/8 CAN	431	MAXPOS 50/5	435
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for type A: Encoder MR 128/256/512 CPT, Page 391