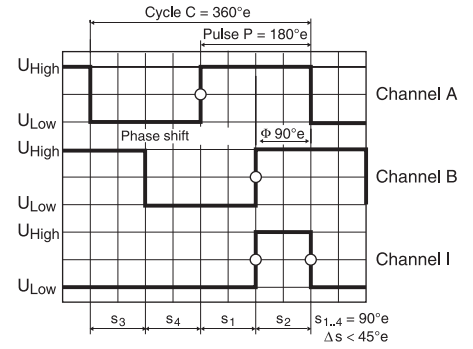


# Encoder MILE, 64 Counts per turn, 3 Channels, with Line Driver

**NEW**

maxon sensor



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

**Order Number**

361545

Type	
Counts per turn	64
Number of channels	3
Max. operating frequency (kHz)	107
Max. speed (rpm)	100000



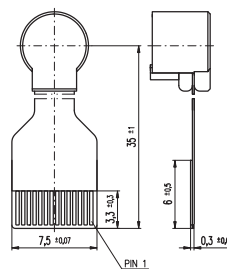
**maxon Modular System**

+ Motor	Page	+ Gearhead	Page	+ Brake	Page	Overall length [mm] / ● see Gearhead
EC 6, 1.2 W	142					21.7
EC 6, 1.2 W	142	GP 6, 0.002-0.03 Nm	203			●

**Technical Data**

Supply voltage $V_{CC}$	$5 V \pm 10 \%$
Output signal	CMOS and TTL compatible
Phase shift $\Phi$	$90^\circ e \pm 45^\circ e$
Signal rise time (typical at $C_L = 25 \text{ pF}$ , $R_L = 1 \text{ k}\Omega$ , $25^\circ\text{C}$ )	10 ns
Signal fall time (typical at $C_L = 25 \text{ pF}$ , $R_L = 1 \text{ k}\Omega$ , $25^\circ\text{C}$ )	10 ns
Index pulse width (nominal)	$90^\circ e$
Operating temperature range	$-20 \dots +100^\circ\text{C}$
Moment of inertia of code wheel	$\leq 0.006 \text{ gcm}^2$
Output current per channel	max. 4 mA

**Pin Allocation**

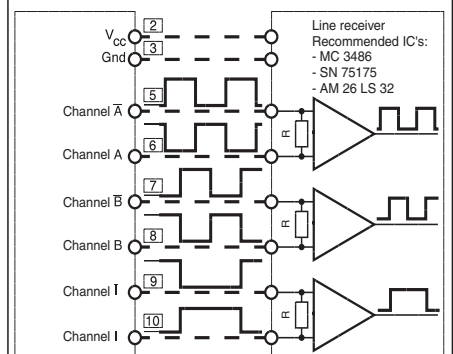


- 1  $V_{CC}$
- 2 Channel A
- 3 Channel A
- 4 Channel B
- 5 Channel B
- 6 Channel I
- 7 Channel I
- 8 Hall sensor 1
- 9 Hall sensor 2
- 10 Hall sensor 3
- 11 GND
- 12 Motor winding 1
- 13 Motor winding 2
- 14 Motor winding 3

Note: Pull-down resistors on the encoder outputs are not permitted.  
Pull-up resistors are permitted, but not required.

**Compatible connector:**  
Molex 0527451496 / Tyco 1-1734839-4

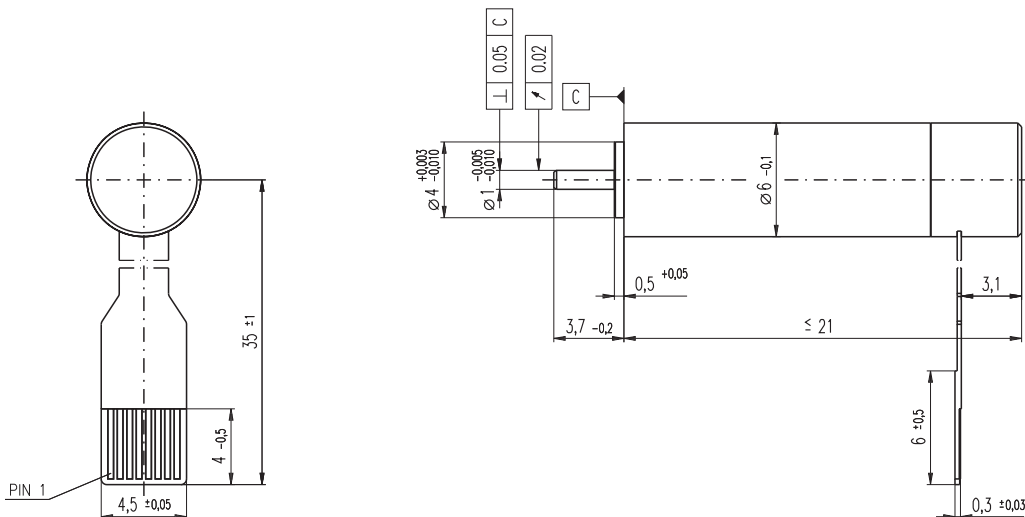
**Connection example**



Terminal resistance  $R = \text{typical } 100 \Omega$

The index signal I is synchronised with channel A or B.

# EC 6 Ø6 mm, brushless, 1.2 Watt



M 2.5:1

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

### Order Number

310599      250101

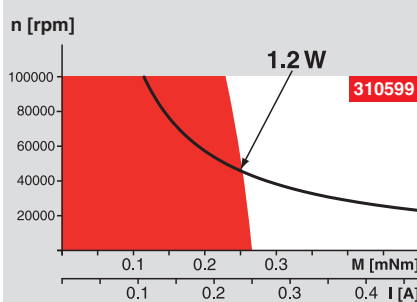
### Motor Data (provisional)

Values at nominal voltage		310599	250101	
1	Nominal voltage	V	6.0	12.0
2	No load speed	rpm	47500	36100
3	No load current	mA	57.4	20.5
4	Nominal speed	rpm	23800	11900
5	Nominal torque (max. continuous torque)	mNm	0.232	0.241
6	Nominal current (max. continuous current)	A	0.265	0.105
7	Stall torque	mNm	0.509	0.402
8	Starting current	A	0.480	0.147
9	Max. efficiency	%	43	39
<b>Characteristics</b>				
10	Terminal resistance phase to phase	Ω	12.5	81.5
11	Terminal inductance phase to phase	mH	0.0911	0.602
12	Torque constant	mNm / A	1.06	2.73
13	Speed constant	rpm / V	9010	3500
14	Speed / torque gradient	rpm / mNm	106000	105000
15	Mechanical time constant	ms	5.56	5.48
16	Rotor inertia	gcm <sup>2</sup>	0.00500	0.00500

### Specifications

- Thermal data**
- 17 Thermal resistance housing-ambient 75 K / W
  - 18 Thermal resistance winding-housing 5.0 K / W
  - 19 Thermal time constant winding 0.464 s
  - 20 Thermal time constant motor 80.2 s
  - 21 Ambient temperature -20 ... +100°C
  - 22 Max. permissible winding temperature +125°C
- Mechanical data (preloaded ball bearings)**
- 23 Max. permissible speed 100000 rpm
  - 24 Axial play at axial load < 0.15 N 0 mm
  - > 0.15 N max. 0.06 mm
  - 25 Radial play preloaded 0.1 N
  - 26 Max. axial load (dynamic) 10 N
  - 27 Max. force for press fits (static) 2 N
  - 28 Max. radial loading, 2 mm from flange

### 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**

### Other specifications

- 29 Number of pole pairs 1
- 30 Number of phases 3
- 31 Weight of motor 2.8 g

Values listed in the table are nominal.

### Connection

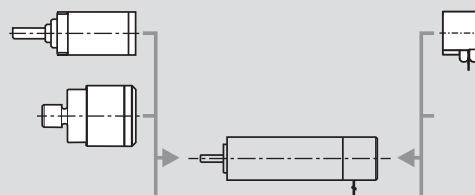
- Pin 1 Motor winding 3
  - Pin 2 Motor winding 2
  - Pin 3 Hall sensor 3
  - Pin 4 V<sub>Hall</sub> 4.5 ... 12 VDC
  - Pin 5 GND
  - Pin 6 Hall sensor 1
  - Pin 7 Hall sensor 2
  - Pin 8 Motor winding 1
- Connector for Flexprint, MOLEX 52745-0896, FPC, 8 pole, pitch 0.5 mm, top contact style.  
Wiring diagram for Hall sensors see page 27

### Option

- Sterilisable version

### maxon Modular System

- 1 Planetary Gearhead  
Ø6 mm  
0.002 - 0.03 Nm  
Page 203
- Micro Harmonic Drive®  
Ø8 mm  
0.006 - 0.016 Nm  
Page 204



### Overview on page 16 - 21

**Encoder MILE**  
64 CPT,  
3 channels  
Page 256

- Recommended Electronics:**
- DEC 24/1 Page 288
  - DEC Module 24/2 289
  - EPOS 24/1 302
  - EPOS2 Module 36/2 302
  - EPOS 24/1 for MILE on request
  - Notes** 20