

D.C. Brushless Motors










Products and specifications subject to change without notice.





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BRUSHLESS motors selection guide

Right angle gearbox

Gearbox		Torque max (Nm)		0.6	1	1.7
Direct motors						
Power usable (w)	Torque nominal (mN.m)	Speed nominal (rpm)	Voltage supply (V)	Motor type dimensions (mm)		
30	140	2200	24	► p.56 80 140 57x57 	► p.61 80 141 440 rpm 	► p.61 80 141 220 rpm 
						► p.61 80 141 110 rpm 
80	240	3250	24	► p.58 82 180 57x57 		► p.64 80 181 650 rpm 
						► p.64 80 181 325 rpm 

Planetary gearboxes

Gearbox		Torque max (mN)		0.8	1	4.5
Direct motors						
Power usable (w)	Torque nominal (mN.m)	Speed nominal (tr.mn)	Voltage supply (V)	Motor type dimensions (mm)		
30	140	2200	24	► p.56 80 140 57x57 	► p.60 80 149 Ø 62 	
						316 rpm
80	240	3250	24	► p.58 82 180 57x57 		► p.62 80 189 Ø 81 
						650 rpm

Gearbox selection based upon mechanical constraint.

Right angle	Perpendicular output quietness (<53 dB) Irreversibility when Ratio = 30+
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Planetary	Centered output shaft High efficiency Reversible
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Power selection based upon available torque and electronic performance






Electronic 30 Watt	Speed regulation 1 Channel, 12 PPR Encoder NPN output type
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Electronic 80 Watt	Torque & Speed regulation 2 channel, 12 PPR Encoder PNP output type
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2	2.1	2.9	3.4	3.5
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► p.61 80 141  44 rpm	► p.61 80 141  74 rpm			
		► p.64 80 181  163 rpm	► p.64 80 181  65 rpm	► p.64 80 181  108 rpm

5	20	30
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► p.60 80 149  Ø 62 48 rpm		► p.60 80 149  Ø 62 48 rpm
		► p.62 80 189  Ø 81

Selection of a geared motor

This choice is based upon the desired usable power at the gearbox output shaft.

$$\text{Power} = \frac{2\pi}{60} C n$$

(W) (Nm) (Rpm)

A geared motor must have usable power equal to or greater than the power required to rotate the load desired. It is selected by checking that the point corresponding to the required operating conditions (torque and speed output) is higher than the nominal torque versus speed curve of the geared motor. The required torque output of a geared motor must be within its maximum recommended torque for continuous duty.

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Direct drive BRUSHLESS DC motors

→ 30 Watts

Ideal for movement and positioning applications

- Adjustable : 4 quadrant variable speed control
- Complete : Brake, 2 channel encoder and integrated EMC filter
- Compact : High efficiency and starting torque
- Open : Compatible with Crouzet Millenium II+ logic controller
- Flexible : 24 V supply allows battery operation

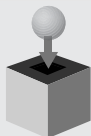


Specifications

30 Watts

Speed control	0-10 V and PWM
Part numbers	80 140 004
Supply voltage (V)	24 (18 → 28)
No-load characteristics	
Speed of rotation (rpm)	3 100
Absorbed current (A)	0.2
Nominal characteristics	
Speed (rpm)	2 200
Torque (mN.m)	140
Absorbed current (A)	1.9
Maximum characteristics	
Start torque (mN.m)	220
Starting current (A)	3.0
General characteristics	
Insulation class (conforming to IEC 85)	B (120°C)
Casing temperature rise at 40°C ambient max. (°C)	15
Thermal time constant (min)	15
Inertia (g.cm ²)	50
Weight (g)	800
Acoustic pressure at 50 cm (dBA)	40
Service life L10 (h)	20 000
0-10 V speed input characteristics	
Input impedance (kΩ)	10
Full scale speed (rpm)	3 100
PWM speed input characteristics	
Input impedance (kΩ)	10
Level 0 input voltage (V)	< 1.7
Level 1 input voltage (V)	> 3
Frequency range (Hz)	150 → 5 000
Full scale speed (rpm)	3 100
Output characteristics	
Type of output	NPN
Max. current (mA)	50

Products adaptations, available on request



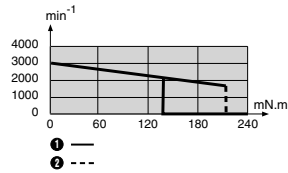
- 2 quadrant speed regulation
- Motors with hall effect sensors only
- Adaptations on electronics
- Special cable lengths
- Special connectors fitted to the cable

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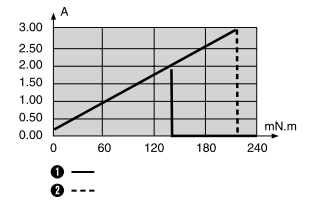
Curves

Speed/torque



- 1 —
2 - - -
- B Continuous operation
C Cyclic operation

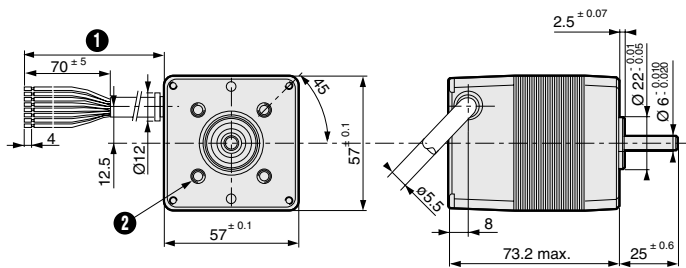
Current/torque



- 1 —
2 - - -
- B Continuous operation
C Cyclic operation

Dimensions

Version IP 54



B Cable length : 400±10 mm

C 4 holes M5 x 0.86 H on Ø 40 depth 4.5 mm mini

Connections

Marking on motor	Function	Wire colour
*a	Power earth	Black
*a	24 V power supply	Red
	Signal earth	Blue
	On/off input	Green
	Direction input	Yellow
	PWM speed setpoint	Orange
	0-10 V speed setpoint	Brown
*b	12 points/rev encoder output	Purple

1 power cable
AWG24
8 conductors
UL2464

Using information

Precautions to take to avoid damaging the motor

*a) Do not invert the polarities

*b) Do not short-circuit the encoder output (NPN)

Do not use the motor as a generator

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Direct drive BRUSHLESS DC motors

→ 80 Watts

Ideal for movement and positioning applications

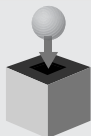
- Adjustable : 4 quadrant variable speed control
- Complete : Brake, 2 channel encoder and integrated CEM filter
- Compact : High efficiency and starting torque
- Open : Compatible with Crouzet Millenium II+ logic controller
- Flexible : 24 V supply allows battery operation



Specifications

	80 Watts PWM control	80 Watts 0-10 V control
Speed control	PWM	0-10 V
Part numbers	80 180 001	80 180 002
Supply voltage (V)	24 (18 → 37)	24 (18 → 37)
No-load characteristics		
Speed of rotation (rpm)	4 200	4 200
Absorbed current (A)	0.4	0.4
Nominal characteristics		
Speed (rpm)	3 250	3 250
Torque (mN.m)	240	240
Absorbed current (A)	4.8	4.8
Maximum characteristics		
Start torque (mN.m)	300	300
Starting current (A)	6.0	6.0
General characteristics		
Insulation class (conforming to IEC 85)	B (120°C)	B (120°C)
Casing temperature rise at 40°C ambient max. (°C)	20	20
Thermal time constant (min)	15	15
Inertia (g.cm ²)	105	105
Acoustic pressure at 50 cm (dBA)	50	50
Service life L10 (h)	20 000	20 000
0-10 V speed input characteristics		
Input impedance (kΩ)	-	440
Full scale speed (rpm)	-	4 200
PWM speed input characteristics		
Input impedance (kΩ)	19	-
Level 0 input voltage (V)	< 2.5	-
Level 1 input voltage (V)	> 11.5	-
Frequency range (Hz)	150 → 1000	-
Full scale speed (rpm)	4 200	-
Output characteristics		
Type of output	PNP	PNP
Max. current (mA)	50	50
Weight (g)	1 400	1 400

Products adaptations, available on request



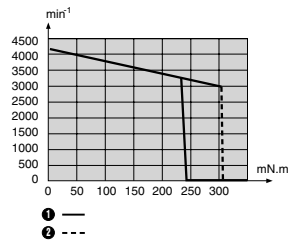
- 2 quadrant speed regulation
- Motors with hall effect sensors only
- Adaptations on electronics
- Special cable lengths
- Special connectors fitted to the cable

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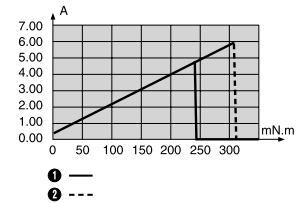
Curves

Speed/torque



① —
② - - -
B Continuous operation
C Cyclic operation

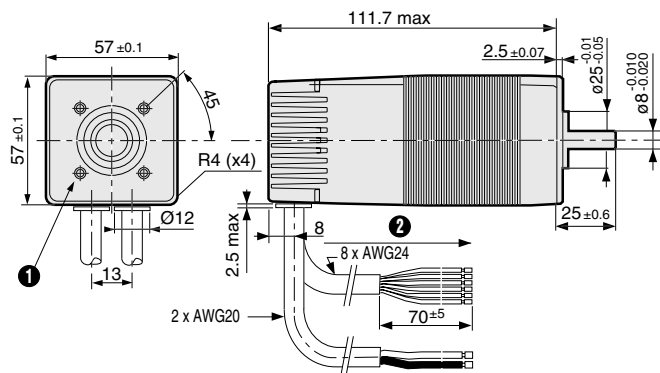
Current/torque



① —
② - - -
B Continuous operation
C Cyclic operation

Dimensions

Short version 80 180 0



B 4 holes M5 x 0.86 H on Ø 40 depth 4.5 mm mini
C Cable length : 500 ± 15 mm

Connections

Marking on motor	Function	Wire colour	
*a	Power earth	Black (2nd harness)	1 power cable AWG20
*a	24 V power supply	Brown (2nd harness)	2 conductors UL2464
	Signal earth	Black	
	On/off input	Green	
	Direction input	Yellow	
	Speed setpoint	Orange	1 control cable AWG24
*b	12 points/rev encoder output	Brown	8 conductors UL2464
*b	Encoder direction output	Red	
	Torque limiting setpoint	Blue	
*b	Torque saturation output	Purple	

Using information

Precautions to take to avoid damaging the motor

- *a) Do not invert the polarities
- *b) Do not short-circuit the encoder output (NPN)
- Do not use the motor as a generator

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BRUSHLESS DC geared motors

→ 30 Watts with Ø 62 mm planetary gearbox

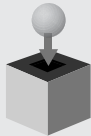
- Concentric output shaft
- Ideal for high reduction ratios
- Ideal for high torque applications
- High efficiency
- Reversible



Specifications

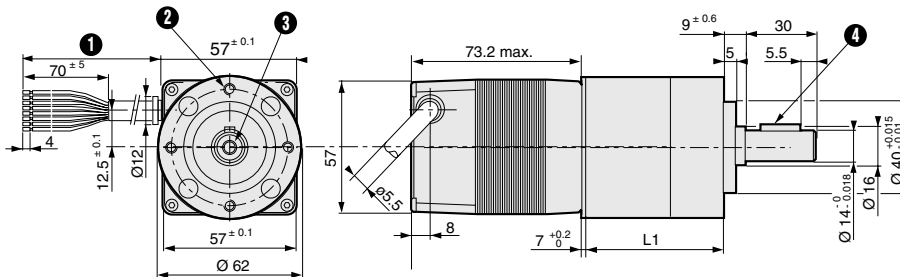
Ratios (i)	Output speed (rpm)	Available torque (N.m)	1 stage	2 stages	3 stages
7	316	0.8	80 149 604		
46	48	5		80 149 605	
308	7	30			80 149 606
General characteristics					
Motor			80 140	80 140	80 140
Speed control			0-10 V and PWM	0-10 V and PWM	0-10 V and PWM
Axial load (dynamic) N			50	70	120
Radial load (dynamic) N			240	360	520
Efficiency (%)			90	80	70
Casing temperature rise at 25°C			35	35	35
Weight (g)			1 600	2 000	2 400

Products adaptations, available on request



- 2 quadrant speed regulation
- Motors with hall effect sensors only
- Adaptations on electronics
- Special cable lengths
- Special connectors fitted to the cable

Dimensions



- B Cable length 400 ± 10 mm
- C 4 holes M5 depth 10 at 90° on $\varnothing 52$
- D Fixation hole M5 depth 12.5
- E Key A5 x 5 x 18

- L1 1 stage : 43.7 mm max.
- L1 2 stages : 59.7 mm max.
- L1 3 stages : 75.2 mm max.

Using information

Respect the limits and precautions of use written in the 30W brushless motor section

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BRUSHLESS DC geared motors

→ 30 Watts with right-angle gearbox

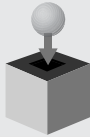
- Output perpendicular to motor
- Ideal for low reduction ratios
- Ideal for applications needing a compact motor
- Silent operation
- Irreversible with high ratios



Specifications

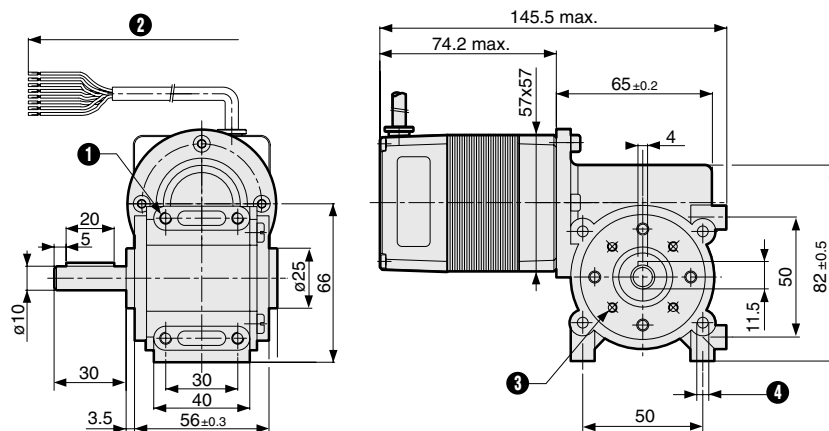
Ratios (i)	Output speed (rpm)	Available torque (N.m)	1 stage
5	440	0.6	80 141 001
10	220	1.0	80 141 002
20	110	1.7	80 141 003
30	74	2.1	80 141 004
50	44	2.0	80 141 006
General characteristics			
Motor			80 140
Speed control			0-10 V and PWM
Axial load (dynamic) N			100
Radial load (dynamic) N			150
Temperature rise at 50 % cycle (°C)			45
Weight (g)			1 480

Products adaptations, available on request



- 2 quadrant speed regulation
- Motors with hall effect sensors only
- Adaptations on electronics
- Special cable lengths
- Special connectors fitted to the cable

Dimensions



- B 4 x M5 depth 8 mm
- C Cable length 400 ± 10 mm
- D 4 x M4 on Ø 36 depth 8 mm
- E 4 x M5 depth 8 mm

Using information

Respect the limits and precautions of use written in the 30 W motor section.
 Continuous operation may cause overheating of the gearbox.
 This gearbox is recommended for applications where the on time does not exceed 50 % of the time, please consult us.

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BRUSHLESS DC geared motors

→ 80 Watts with Ø 81 planetary gearboxes - PWM control

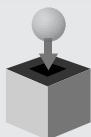
- Concentric output shaft
- Ideal for high reduction ratios
- Ideal for high torque applications
- High efficiency
- Reversible



Specifications

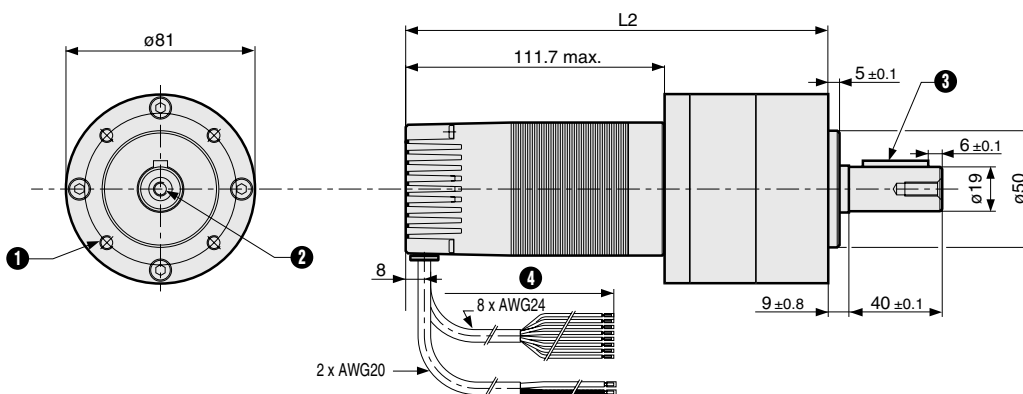
Ratios (i)	Output speed (rpm)	Available torque (N.m)	1 stage	2 stages	3 stages
5	650	1	80 189 701		
27	120	4.5		80 189 702	
139	23	20			80 189 703
General characteristics					
Motor			80 180	80 180	80 180
Speed control			PWM	PWM	PWM
Axial load (dynamic) N			80	120	200
Radial load (dynamic) N			200	300	500
Efficiency (%)			80	70	60
Casing temperature rise at 25°C			35	35	35
Weight (g)			3 200	3 900	4 600

Products adaptations, available on request



- 2 quadrant speed regulation
- Motors with hall effect sensors only
- Adaptations on electronics
- Special cable lengths
- Special connectors fitted to the cable

Dimensions



- B 4 holes M6 x 12 on Ø65
- C Fixing hole M6 x 16
- D Cable length 500 ± 15 mm
- E Key A6 x 6 x 28 according to DIN6885

- L2 1 stage : 182 mm max.
- L2 2 stages : 203.9 mm max.
- L2 3 stages : 226 mm max.

Using information

Respect the limits and precautions of use written in the 80W brushless motor section.

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BRUSHLESS DC geared motors

→ 80 Watts with Ø 81 mm planetary gearbox - 0-10 V control

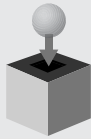
- Concentric output shaft,
- Ideal for high reduction ratios,
- Ideal for high torque applications,
- High efficiency,
- Reversible.



Specifications

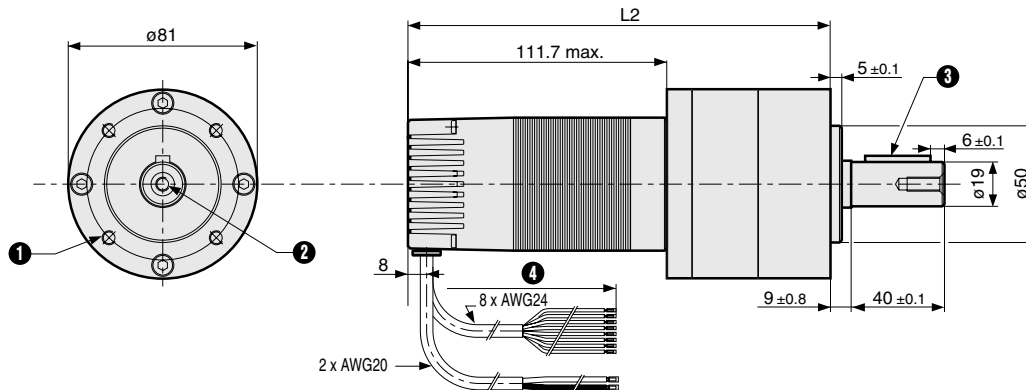
Ratios (i)	Output speed (rpm)	Available torque (N.m)	1 stage	2 stages	3 stages
5	650	1	80 189 704		
27	120	4.5		80 189 705	
139	23	20			80 189 706
General characteristics					
Motor			80 180	80 180	80 180
Speed control			0-10 V	0-10 V	0-10 V
Axial load (dynamic) N			80	120	200
Radial load (dynamic) N			200	300	500
Efficiency (%)			80	70	60
Casing temperature rise at 25°C			35	35	35
Weight (g)			3 200	3 900	4 600

Products adaptations, available on request



- 2 quadrant speed regulation
- Motors with hall effect sensors only
- Adaptations on electronics
- Special cable lengths
- Special connectors fitted to the cable

Dimensions



- B 4 holes M6 x 12 x on Ø65
- C Fixing hole M6 x 16
- D Cable length 500 ± 15 mm
- E Key A6 x 6 x 28 according to DIN6885

- L2 1 stage : 182 mm max.
- L2 2 stages : 203.9 mm max.
- L2 3 stages : 226 mm max.

Using information

Respect the limits and precautions of use written in the 80W brushless motor section.

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BRUSHLESS DC geared motors

→ 80 Watts with right-angle gearbox

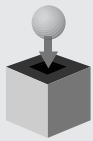
- Output perpendicular to motor
- Ideal for low reduction ratios
- Ideal for applications needing a compact motor
- Silent operation
- Irreversible with high ratios



Specifications

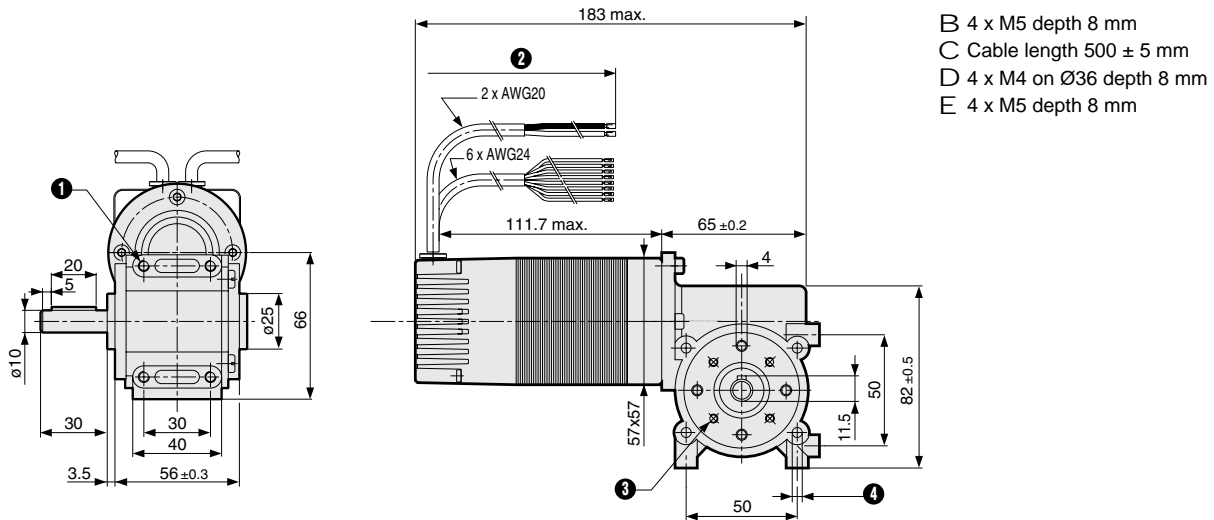
Ratios (i)	Output speed (rpm)	Available torque (N.m)	80 Watts PWM control	80 Watts 0-10 V control
5	650	1.0	80 181 001	80 181 010
10	325	1.7	80 181 002	80 181 011
20	163	2.9	80 181 003	80 181 012
30	108	3.5	80 181 004	80 181 013
50	65	3.4	80 181 006	80 181 015
General characteristics				
Motor			80 180	80 180
Speed control			PWM	0-10 V
Axial load (dynamic) daN			10	100
Radial load (dynamic) daN			15	150
Temperature rise at 50 % cycle (°C)			45	45
Weight (g)			1 920	1 920

Products adaptations, available on request



- 2 quadrant speed regulation
- Motors with hall effect sensors only
- Adaptations on electronics
- Special cable lengths
- Special connectors fitted to the cable

Dimensions



Using information

Respect the limits and precautions of use written in the 80 W motor section.
 Continuous operation may cause overheating of the gearbox.
 This gearbox is recommended for applications where the on time does not exceed 50 % of the time, please consult us.

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