

DCmind: BRUSHLESS MOTORS

Motors 38 to 145 W nominal output power range TNi21



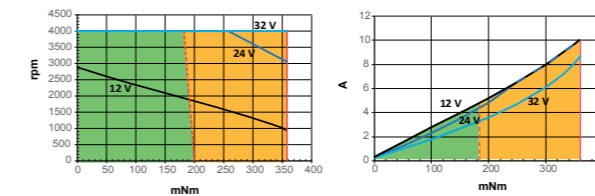
- › For control, speed and torque applications
- › Very high power density
- › 4 inputs (where 2 of them analog) / 3 outputs integrated electronic controls
- › Holding torque function
- › Battery supply compatible 12 V and 24 V

Part numbers

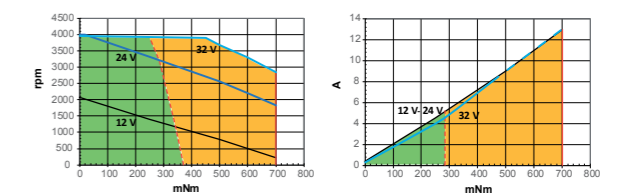
	38 to 75 W	45 to 102 W	72 to 145 W
Type	80140 TNi21	80180 TNi21	80280 TNi21
Part numbers			
PWM speed mode, cable output	80140059	80180056	80280013
0-10 V speed mode, cable output	80140051	80180050	80280007
PWM speed mode, connector M16 - 12 pins	80140079	80180072	
0-10 V speed mode, connector M16 - 12 pins	80140071	80180066	
Nominal power supply range (V ₋₋₋)	12 - 32	12 - 32	12 - 32
Min. max. power supply (V ₋₋₋)	10 - 36	10 - 36	10 - 36
No-load characteristics	12 V ₋₋₋ 24 V ₋₋₋ 32 V ₋₋₋	12 V ₋₋₋ 24 V ₋₋₋ 32 V ₋₋₋	12 V ₋₋₋ 24 V ₋₋₋ 32 V ₋₋₋
Speed of rotation (rpm)	2900 4000 4000	2100 4000 3950	2000 3950 3950
Absorbed current (A)	0.34 0.29 0.27	0.35 0.39 0.34	0.5 0.7 0.6
Nominal characteristics	12 V ₋₋₋ 24 V ₋₋₋ 32 V ₋₋₋	12 V ₋₋₋ 24 V ₋₋₋ 32 V ₋₋₋	12 V ₋₋₋ 24 V ₋₋₋ 32 V ₋₋₋
Speed (rpm)	1900 4000 4000	1250 3350 3900	1400 3250 3900
Absorbed current (A)	5.2 4.4 3.2	6.7 5.4 4	8.5 6.9 6
Torque (mNm)	193 184 178	340 285 250	490 390 355
Output power (W)	38 77 75	45 100 102	72 133 145
Maximal characteristics	12 V ₋₋₋ 24 V ₋₋₋ 32 V ₋₋₋	12 V ₋₋₋ 24 V ₋₋₋ 32 V ₋₋₋	12 V ₋₋₋ 24 V ₋₋₋ 32 V ₋₋₋
Speed (rpm)	1600 3050 4000	1040 2160 3100	800 1900 2400
Absorbed current (A)	6.5 10 10	7.2 11 12	15 15 12.5
Torque (mNm)	250 358 358	400 600 650	1000 1000 1000
Output power (W)	42 114 150	44 136 211	84 199 251
General characteristics			
Regulation (quadrants)	4	4	4
Conformity to EMC Directive in accordance with (EN 55022)	Class B	Class B	Class B
Insulation conforming to IEC60085	Class E	Class E	Class B
Thermal time constant (mn)	20	30	30
Noise level (dBA)	40	40	50
Inertia (g.cm ²)	75	115	120
Number of rotor poles	4	4	8
Ambient operating temperature (°C)	-30 → +70	-30 → +70	-30 → +70
Service life (h)	20000	20000	20000
Ball bearing	✓	✓	✓
Weight (kg)	0.95	1.34	1.44
0-10 V or PWM Speed input characteristics			
Input impedance (kΩ)	69	69	69
Speed control (rpm)	120 → 4000	120 → 4000	120 → 4000
Level 0 input voltage (V)	0 → 2	0 → 2	0 → 2
Level 1 input voltage (V)	7.5 → 39	7.5 → 39	7.5 → 39
Frequency range (Hz)	100 → 2000	100 → 2000	100 → 2000
0-10 V or PWM Torque input characteristics			
Input impedance (kΩ)	69	69	69
Torque limit (mNm)	360 → 35	700 → 30	1000 → 40
Holding limit (mNm)	150 → 35	230 → 30	310 → 40
Level 0 input voltage (V)	0 → 2	0 → 2	0 → 2
Level 1 input voltage (V)	7.5 → 39	7.5 → 39	7.5 → 39
Frequency range (Hz)	100 → 2000	100 → 2000	100 → 2000
On/Off and Direction digital input characteristics			
Input impedance (kΩ)	57	57	57
Level 0 input voltage (V ₋₋₋)	0 → 2	0 → 2	0 → 2
Level 1 input voltage (V ₋₋₋)	4 → 39	4 → 39	4 → 39
Torque alarm, Encoder and Direction output characteristics			
Type of output-Maximum admissible current (mA)	PNP	PNP	PNP
Maximum admissible current (mA)	50	50	50
IP65 over the whole motor apart from the shaft output. Versions with brake are IP20			
Accessory			
2 metre shielded cable with 12-pin female M16 connector			15275008

Curves

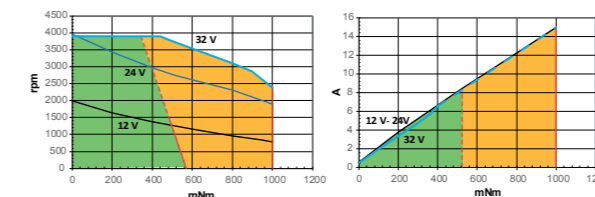
Speed / Torque 80140 TNi21 - Current / Torque 80140 TNi21



Speed / Torque 80180 TNi21 - Current / Torque 80180 TNi21



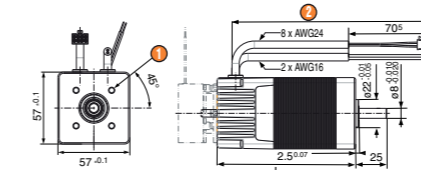
Speed / Torque 80280 TNi21 - Current / Torque 80280 TNi21



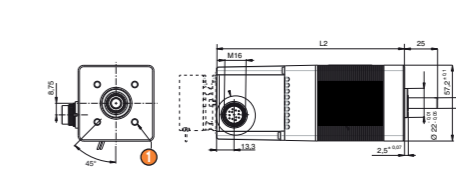
- Continuous running area
- Cycling running area
- Maximum continuous torque
- Maximum peak torque

Dimensions (mm)

Cable output versions



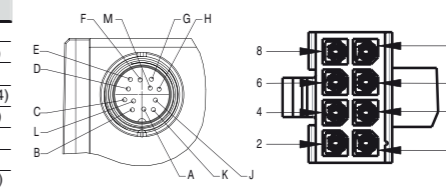
M16 connector version - 12 pins



- L: 80140: 92 max
 - L: 80180 / 80280: 112 max
 - L2: 80140: 123 max
 - L2: 80180 / 80280: 143 max
- More information: see page 16

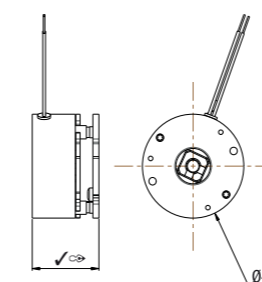
Connections

	Connector M16	Cable color
Power ground	G+M	AWG16 Blue
Power supply 24 V	E+F	AWG16 Brown
Logic ground	H	AWG24 Black (5)
Input 1: On/Off	C	AWG24 Green (1)
Input 2: Direction	B	AWG24 Yellow (2)
Input 3: Speed	J	AWG24 Orange (4)
Output 1: Tachometer	A	AWG24 Brown (6)
Output 2: Real direction	L	AWG24 Red (8)
Input 4: Torque	D	AWG24 Blue (3)
Output 3: Torque at max.	K	AWG24 Purple (7)



Options

Holding brake 0.5 Nm - 24 V₋₋₋



- › Shaft, pinion, pulley dimensions
- › Cable wire length
- › Powerful controlled brake (directed)
- › Programs evolution

User information

Notice available on website, please read it before use.

GEARBOXES FOR DCmind BRUHLESS RANGE

4 to 120 Nm

- > Planetary and worm gearboxes
- > Shafts on ball bearings
- > Long service life
- > IP65



Gearboxes	Planetary Ø 52			Planetary Ø 62			Planetary Ø 81			Worm
Type	810495			810496			810497			810410
Associated motors	Part number			Part number			Part number			Part number
80140 TNi21	801495 TNi21			801496 TNi21			801897 TNi21			801410 TNi21
80180 TNi21				801896 TNi21			802897 TNi21			801810 TNi21
80280 TNi21										802810 TNi21
80140 SMI21	801495 SMI21			801496 SMI21			801897 SMI21			801410 SMI21
80180 SMI21				801896 SMI21			802897 SMI21			801810 SMI21
80280 SMI21										802810 SMI21
Gearbox characteristics										
Number of stages	1	2	3	1	2	3	1	2	3	1
Maximum permitted torque (Nm)	4	12	25	8	25	50	20	60	120	10
Efficiency	0.8	0.75	0.7	0.9	0.8	0.7	0.9	0.8	0.7	0.6 → 0.3
Axial dynamic load (daN)	6	10	15	7	10	15	8	12	20	10
Radial dynamic load (daN)	20	32	45	24	36	52	40	60	100	15
Operating temperature	-20 → +70°C			-20 → +70°C			-20 → +70°C			-20 → +70°C
Weight (kg)	0.7	0.8	1.1	0.8	1.2	1.6	1.8	2.5	3.2	0.7
Standard reduction ratios	6.75	25	93	5.16	19	100	5	19	100	5 - 10 - 20 - 30 - 50
		46	169	6.75	27	139		27	139	
			308		46	236			236	
						308				
Other ratios possible										15 - 100

Other ratios possible

Comments

Ø 52 planetary gearbox: Metal gears on all stages. IP65 apart from the output shaft.

Ø 62 planetary gearbox: On the first stage, the planet gears are made of composite materials which improve efficiency and service life. On the other stages, the metal gears turn on needle bearings. IP65 apart from the output shaft.

Ø 81 planetary gearbox: All gears are metal and turn on needle bearings, resulting in excellent robustness and a very long service life. IP65 apart from the output shaft.

Worm gearbox: This gearbox combines a tempered steel worm and a hard bronze helical gear wheel, thus ensuring a long service life. The wheel is coated with grease, ensuring an excellent slip coefficient and good heat dissipation. O-rings and lipseals are used in combination with a compression spring to create a tight seal at the gearbox output shaft and the motor input shaft. IP65 gearbox.

The casing is made of aluminium to maximise heat exchanges with its supporting surface on the machine. However, due to the high power that can be transmitted by this gearbox and the low efficiency inherent in large worm gearbox reduction ratios, make sure that the gearbox casing temperature does not exceed 75°C during operation.

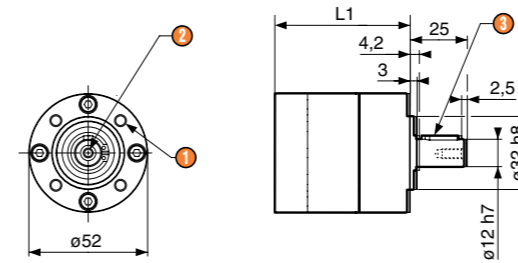
The output shaft can be placed on the right or left, or can be a double shaft (shaft output on both sides).

Made to order products, available on request

- > Special shafts
- > Other reduction ratios
- > Other fixing holes
- > Special mounting flange

Dimensions (mm)

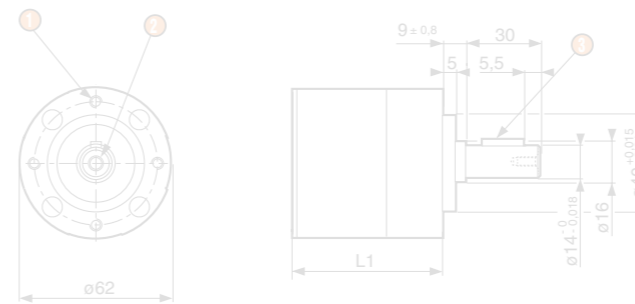
Planetary gearbox Ø 52 (810495)



- 1 4 x M5 at 90°, depth 10 over Ø 40
- 2 M4 x 10
- 3 Parallel key 4 x 4 x 16 DIN 6885 A

L1 1 stage: 55.3 ± 0.5
L1 2 stages: 69.5 ± 0.5
L1 3 stages: 83.7 ± 0.5

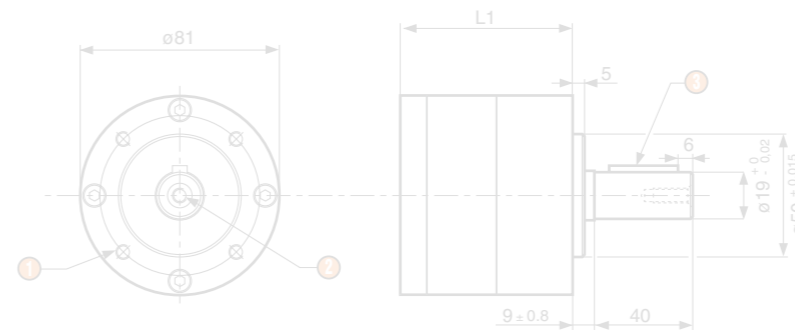
Planetary gearbox Ø 62 (810496)



- 1 4 x M5 at 90°, depth 10 over Ø 52
- 2 M5, depth 12.5
- 3 Parallel key 5 x 5 x 18 DIN 6885 A

L1 1 stage: 52.1 ± 0.7
L1 2 stages: 67.9 ± 0.7
L1 3 stages: 83.8 ± 0.7

Planetary gearbox Ø 81 (810497)

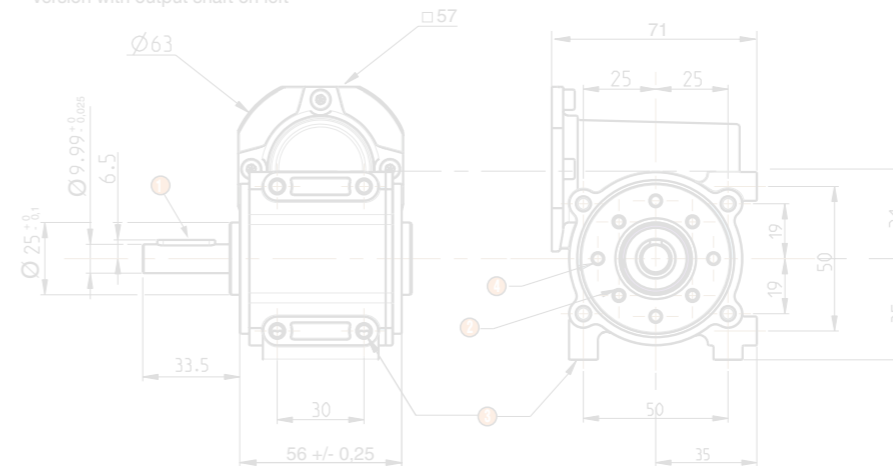


- 1 4 x M6, depth 12 over Ø 65
- 2 M6 x 16
- 3 Parallel key 6 x 6 x 28 DIN 6885 A

L1 1 stage: 70.5 ± 0.6
L1 2 stages: 92.2 ± 0.6
L1 3 stages: 113.8 ± 0.6

Worm gearbox RAD10

Version with output shaft on left



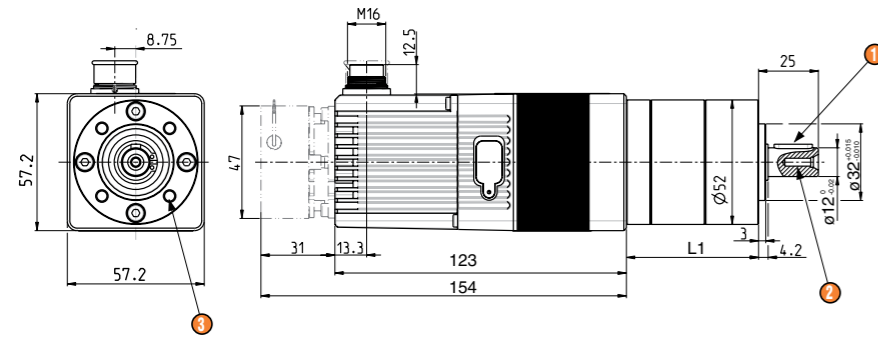
- 1 Parallel key 4 x 4 x 20 DIN6885
- 2 4 x M4, depth 8 over Ø 36
- 3 8 x M5, depth 8
- 4 4 x Ø 3.8 depth 10 over Ø 40

The left-hand and right-hand sides of the gearbox are identical.

DC GEARED DCmind BRUSHLESS TNi21

Dimensions (mm)

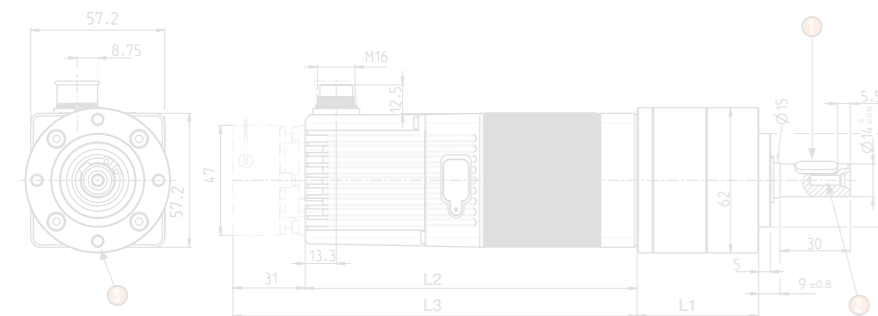
801495 - TNi21 + P52 M16 connector with or without brake



- L1 1 stage: 55.3 ±0.5
- L1 2 stages: 69.5 ±0.5
- L1 3 stages: 83.7 ±0.5

- 1 Parallel key 4 x 4 x 16 DIN 6885 A
- 2 M4 x 10
- 3 4 x M5 at 90°, depth 10 over Ø 40

801496 - 801896 - TNi21 + P62 M16 connector with or without brake

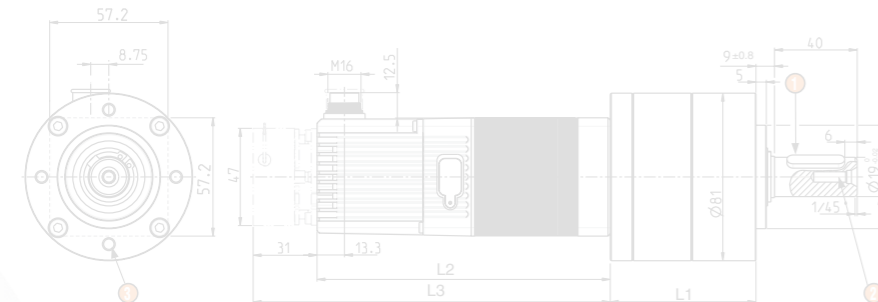


- L1 1 stage: 52.1 ±0.7
- L1 2 stages: 67.9 ±0.7
- L1 3 stages: 83.8 ±0.7

- L2 80140: 123 max.
- L2 80180: 143 max.
- L3 80140: 154 max.
- L3 80180: 174 max.

- 1 Parallel key 5 x 5 x 18 DIN 6885 A
- 2 M5 x 12
- 3 4 x M5 at 90°, depth 10 over Ø 52

801897 - TNi21 + P81 M16 connector with or without brake

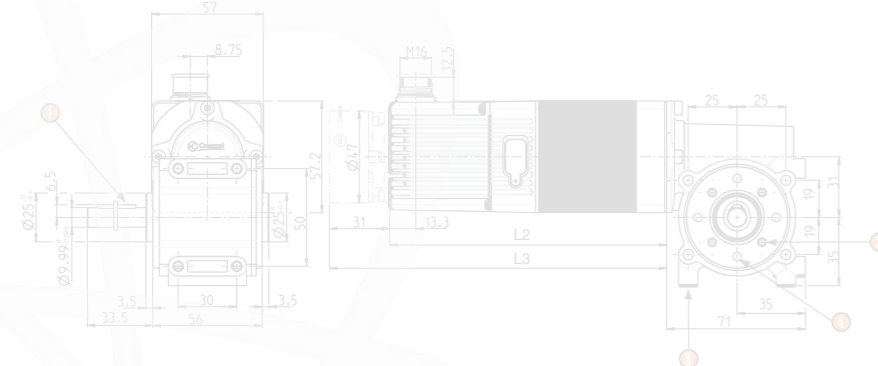


- L1 1 stage: 70.5 ±0.6
- L1 2 stages: 92.2 ±0.6
- L1 3 stages: 113.8 ±0.6

- L2 80180: 143 max.
- L3 80180: 174 max.

- 1 Parallel key 6 x 6 x 28 DIN 6885 A
- 2 M6 x 16
- 3 4 x M6, depth 12 over Ø 65

801410 - 801810 - 802810 - TNi21 + RAD10 M16 connector with or without brake



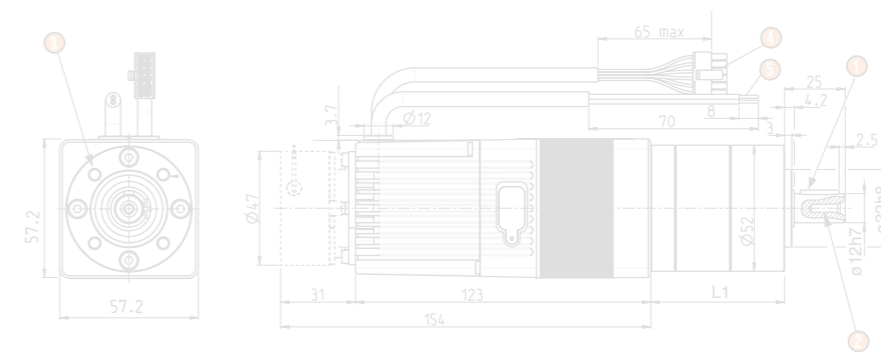
- L2 80140: 123 max.
- L2 80180-80280: 143 max.
- L3 80140: 154 max.
- L3 80180-80280: 174 max.

- 1 Parallel key 4 x 4 x 20 DIN 6885 A
- 2 4 x M4, depth 8 over Ø 36
- 3 8 x M5, depth 8
- 4 4 x 3.8, depth 10 over Ø 40

DC GEARED DCmind BRUSHLESS SMi21

Dimensions (mm)

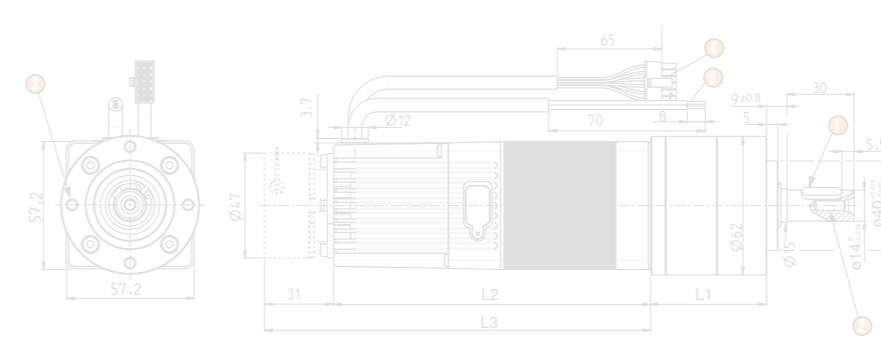
801495 - SMi21 + P52 with or without brake



- L1 1 stage: 55.3 ±0.5
- L1 2 stages: 69.5 ±0.5
- L1 3 stages: 83.7 ±0.5

- 1 Parallel key 4 x 4 x 16 DIN 6885 A
- 2 M4 x 10
- 3 4 x M5 at 90°, depth 10 over Ø 40
- 4 Command cable 12 x AWG26 / 500 mm
- 5 Power cable 2 x AWG16 / 500 mm

801496 - 801896 - SMi21 + P62 with or without brake



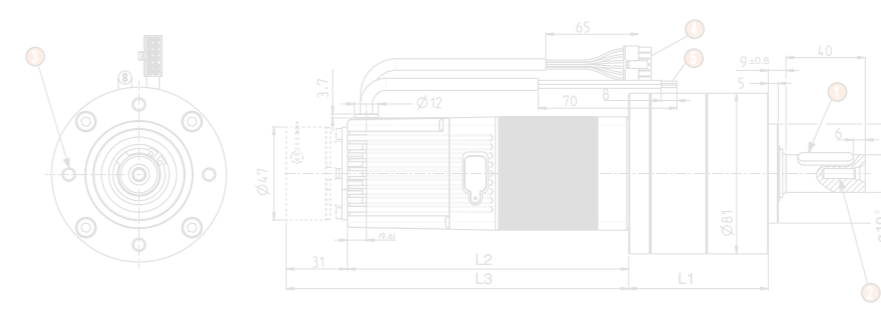
- L1 1 stage: 52.1 ±0.7
- L1 2 stages: 67.9 ±0.7
- L1 3 stages: 83.8 ±0.7

- L2 80140: 123 max.
- L2 80180: 143 max.

- L3 80140: 154 max.
- L3 80180: 174 max.

- 1 Parallel key 5 x 5 x 18 DIN 6885 A
- 2 M5 x 12
- 3 4 x M5 at 90°, depth 10 over Ø 52
- 4 Command cable 12 x AWG26 / 500 mm
- 5 Power cable 2 x AWG16 / 500 mm

801897 - 802897 - SMi21 + P81 with or without brake

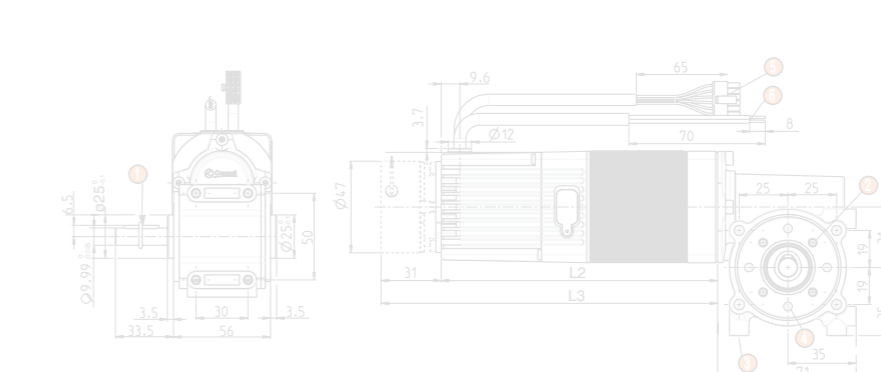


- L1 1 stage: 70.5 ±0.6
- L1 2 stages: 92.2 ±0.6
- L1 3 stages: 113.8 ±0.6

- L2 80180 - 80280: 143 max.
- L3 80180 - 80280: 174 max.

- 1 Parallel key 6 x 6 x 28 DIN 6885 A
- 2 M6 x 16
- 3 4 x M6 at 90°, depth 12 over Ø 65
- 4 Command cable 12 x AWG26 / 500 mm
- 5 Power cable 2 x AWG16 / 500 mm

801410 - 801810 - 802810 - SMi21 + RAD10 with or without brake



- L2 80140: 123 max.
- L2 80180 - 80280: 143 max.
- L3 80140: 154 max.
- L3 80180 - 80280: 174 max.

- 1 Parallel key 4 x 4 x 20 DIN 6885 A
- 2 4 x M4, depth 8 over Ø 36
- 3 8 x M5, depth 8
- 4 4 x Ø 3.8, depth 10 over Ø 40
- 5 Command cable 12 x AWG26 / 500 mm
- 6 Power cable 2 x AWG16 / 500 mm