

PLANETARY GEAR DC MOTORS

Ø12 mm to 90 mm
0.6 W to 80 W

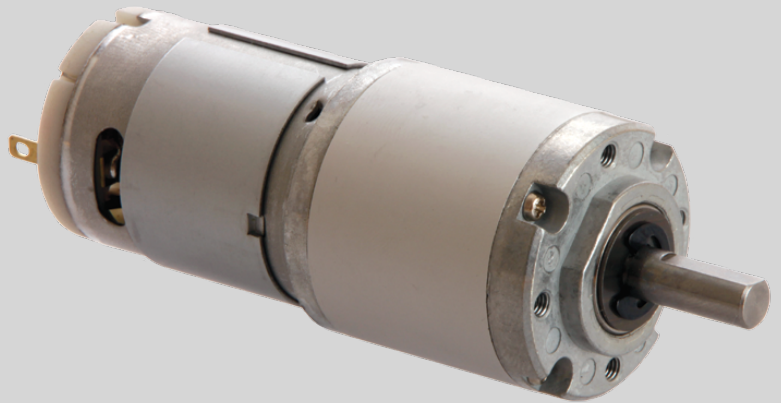
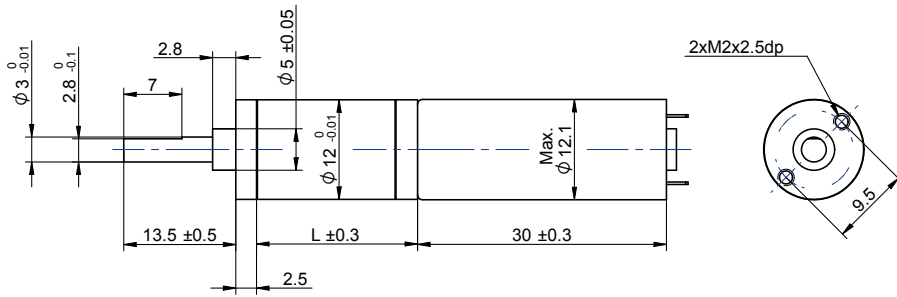


TABLE OF CONTENTS

PD1230	2.4V / 3V	Ø12 mm	0.6W / 0.6W	Page 3
PD1330	2.4V / 3V	Ø13 mm	0.6W / 0.6W	Page 4
PD1626	12V / 24V	Ø16 mm	0.4W / 1W	Page 5
PD2232	12V / 24V	Ø22 mm	1.5W / 1.7W	Page 6
PD2846	12V / 24V	Ø28 mm	4W / 5W	Page 7
PD3046	12V / 24V	Ø30 mm	7W / 8W	Page 8
PD3237	12V / 24V	Ø32 mm	4W / 4W	Page 9
PD3246	12V / 24V	Ø32 mm	7W / 8W	Page 10
PD3557	12V / 24V	Ø35 mm	13W / 13W	Page 11
PD3665	12V / 24V	Ø36 mm	18W / 19W	Page 12
PD3865	12V / 24V	Ø38 mm	18W / 19W	Page 13
PDS4265	12V / 24V	Ø42 mm	17W / 15W	Page 14
PD4266	12V / 24V	Ø42 mm	41W / 35W	Page 15
PD5269	12V / 24V	Ø52 mm	59W / 48W	Page 16
PD62117	12V / 24V	Ø62 mm	16W / 27W	Page 17
PD71125	12V / 24V	Ø71 mm	28W / 46W	Page 18
PD80138	12V / 24V	Ø80 mm	44W / 59W	Page 19
PD90158	12V / 24V	Ø90 mm	68W / 80W	Page 20
Encoder	6/14/38 counts per revolution 2 channels			Page 21

PD1230 Ø12 mm carbon brushes 0.6 W



Unit: mm

MODEL NO. DESIGNATIONS

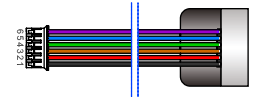
PD1230 - VOLTAGE - RATIO - E

Example: PD1230-2.4-4-E

E = Encoder

ENCODER

Page 21



GEAR MOTOR DATA

	4:1	16:1	64:1	256:1	1024:1	4096:1
Reduction	4:1	16:1	64:1	256:1	1024:1	4096:1
Nominal torque 2.4 V (mNm)	2	6.9	24.5	82.4	196	196
Nominal speed 2.4 (rpm)	2400	600	150	38	10	2.8
Nominal torque 3 V (mNm)	1.9	6.4	22.6	76.5	196	196
Nominal speed 3 (rpm)	2400	610	150	39	10	2.8
Length (mm)	42.8	46.1	49.4	52.7	56	59.3
Weight (g)	25.1	27.2	29.3	31.4	33.5	35.6

GEAR MOTOR FEATURES AND STANDARD DATA

	STANDARD	CUSTOMIZATION OPTIONS
Type	Planetary brush dc gear motor	
Motor type	Iron core, brush commutation	Winding parameters
Motor brush type	Carbon brushes	
Motor terminals	Soldering ears	Wiring harnesses, cables and connectors
EMC filter	No	
Gears	Plastic/Copper	
Motor pinion gear	Copper	
Bearing	Sleeve bearing	
Shaft	Hardened stainless steel	Dimensions
Encoder option	Magetic encoder (to order as option)	Through shaft dimensions and screw holes
Operating temperature	-10...+60 °C	- 40...+60 °C
Backlash no load	≤ 3°	
Radial load 5 mm from gear flange	≤ 4.9 N	
Shaft axial load	≤ 4.9 N	
Shaft press fit force	≤ 14.7 N	
Radial play	≤ 0.05 mm	
Thrust play	≤ 0.2 mm	
Manufacturing quality standards	ISO 9001	
RoHS compliance	Yes	
CE label	No	Yes
UL approval	No	Yes

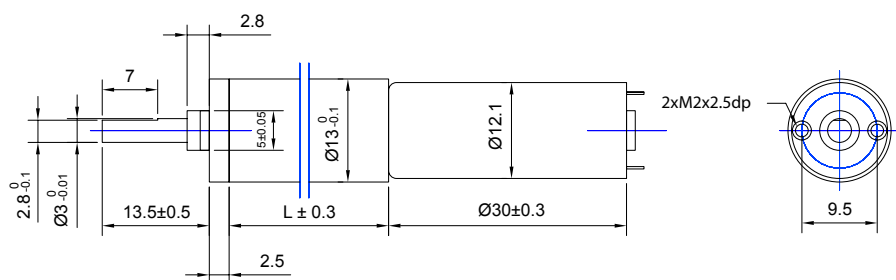
MOTOR DATA

	2.4	3
Nominal voltage (V)	2.4	3
No load speed (rpm)	12500	12500
No load current (mA)	≤ 130	≤ 80
Nominal speed (rpm)	10000	10000
Nominal torque (mNm)	0.6	0.5
Nominal current (mA)	≤ 450	≤ 340
Stall torque (mNm)	1.8	1.9
Starting current (A)	3.0	1.9
Output (W)	0.62	0.59
Length (mm)	30	30
Weight (g)	13	13

GEAR HEAD DATA

	4:1	16:1	64:1	256:1	1024:1	4096:1
Reduction	4:1	16:1	64:1	256:1	1024:1	4096:1
Max. continous torque (mNm)	78	118	157	177	196	196
Intermittently permissible torque (mNm)	235	353	470	530	588	588
Efficiency %	85	75	65	55	45	40
Length L (mm)	12.8	16.1	19.4	22.7	26	29.3
Weight (g)	12.1	14.2	16.3	18.4	20.5	22.6

PD1330 Ø13 mm carbon brushes 0.6 W



Unit: mm

MODEL NO. DESIGNATIONS

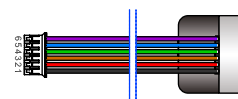
PD1330 - VOLTAGE - RATIO - E

Example: PD1330-2.4-4-E

E = Encoder

ENCODER

Page 21



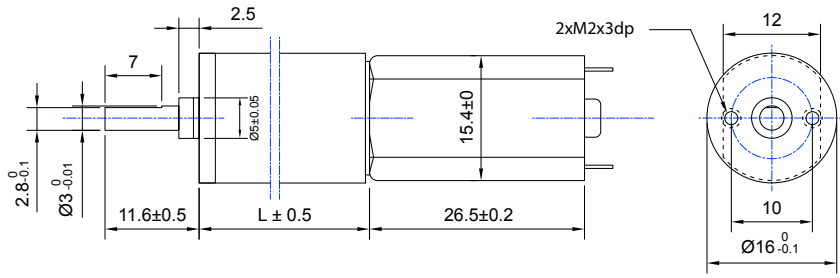
GEAR MOTOR DATA						
Reduction	4:1	16:1	64:1	256:1	1024:1	4096:1
Nominal torque 2.4 V (mNm)	2.0	6.9	24.5	82.4	196	196
Nominal speed 2.4 (rpm)	2400	600	150	38	10	2.8
Nominal torque 3 V (mNm)	1.9	6.4	22.6	76.5	196	196
Nominal speed 3 (rpm)	2400	610	150	39	10	2.8
Length (mm)	40.2	43.5	46.8	50.1	53.4	56.7
Weight (g)	24	26	28	30	32	34

GEAR MOTOR FEATURES AND STANDARD DATA		
	STANDARD	CUSTOMIZATION OPTIONS
Type	Planetary brush dc gear motor	
Motor type	Iron core, brush commutation	Winding parameters
Motor brush type	Carbon brushes	
Motor terminals	Soldering ears	Wiring harnesses, cables and connectors
EMC filter	No	
Gears	Straight teeth metal gears produced by milling process	Plastic
Motor pinion gear	Bakelite	Metal
Bearing	Sleeve bearing	
Shaft	Hardened stainless steel	Dimensions
Encoder option	Magetic encoder (to order as option)	Through shaft dimensions and screw holes
Operating temperature	-10...+60 °C	- 40...+60 °C
Backlash no load	≤ 3°	
Radial load 8 mm from gear flange	≤ 4.9 N	
Shaft axial load	≤ 4.9 N	
Shaft press fit force	≤ 14.7 N	
Radial play	≤ 0.08 mm	
Thrust play	≤ 0.2 mm	
Manufacturing quality standards	ISO 9001	
RoHS compliance	Yes	
CE label	No	Yes
UL approval	No	Yes

MOTOR DATA		
Nominal voltage (V)	2.4	3
No load speed (rpm)	12500	12500
No load current (mA)	≤ 130	≤ 80
Nominal speed (rpm)	10000	10000
Nominal torque (mNm)	0.59	0.55
Nominal current (mA)	≤ 450	≤ 340
Stall torque (mNm)	2.7	2.9
Starting current (A)	1.5	1.5
Output (W)	0.6	0.6
Length (mm)	30	30
Weight (g)	13	13

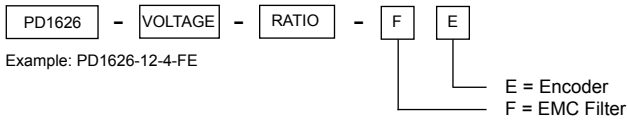
GEAR HEAD DATA						
Reduction	4:1	16:1	64:1	256:1	1024:1	4096:1
Max. continous torque (mNm)	78	118	157	177	196	196
Intermittently permissible torque (mNm)	235	353	471	530	588	588
Efficiency %	85	75	65	55	45	40
Length L (mm)	10.2	13.5	16.8	20.1	23.4	26.7
Weight (g)	10.7	12.8	14.9	17	19.1	21.2

PD1626 12V-24V Ø13 mm carbon brushes 0.5 W



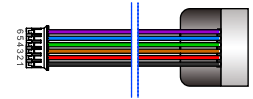
Unit: mm

MODEL NO. DESIGNATIONS



ENCODER

Page 21



GEAR MOTOR DATA

Reduction	4:1	14:1	19:1	29:1	62:1	72:1	84:1	104:1	128:1	157:1	231:1	316:1	370:1	455:1	561:1	690:1	1014:1	1621:1	1996:1	3027:1
Nominal torque 12 V (mNm)	2.1	5.9	8	11.8	21.6	25.5	29.4	37.3	45.1	53.9	68.6	93.2	108	132	167	196	243	235	235	235
Nominal speed 12 V (rpm)	1330	430	315	205	100	85	73	59	48	39	26	19	16	13.5	11	8.9	6	3.8	3.2	2.3
Nominal torque 24 V (mNm)	3.0	8.3	11.8	17.7	32.4	37.3	44.1	54.9	67.7	83.4	98.1	137	157	196	196	235	235	235	235	235
Nominal speed 24 V (rpm)	2400	760	669	365	170	150	130	105	85	69	47	34	29	24	19.5	15.9	11	7.2	6.1	4.1
Length (mm)	41.55	45.20	45.20	45.20	48.85	48.85	48.85	48.85	48.85	48.85	52.50	52.50	52.50	52.50	52.50	52.50	56.15	56.15	56.15	56.15
Weight (g)	37	41	41	41	45	45	45	45	45	45	49	49	49	49	49	49	53	53	53	53

GEAR MOTOR FEATURES AND STANDARD DATA

	STANDARD	CUSTOMIZATION OPTIONS
Type	Planetary brush dc gear motor	
Motor type	Iron core, brush commutation	Winding parameters
Motor brush type	Carbon brushes	
Motor terminals	Soldering ears	Wiring harnesses, cables and connectors
EMC filter	Yes	
Gears	Straight teeth metal gears produced by milling process	Plastic
Motor pinion gear	Bakelite	Metal
Bearing	Sleeve bearing	
Shaft	Hardened stainless steel	Dimensions
Encoder option	Magnetic encoder (to order as option)	Through shaft dimensions and screw holes
Operating temperature	-10...+60 °C	- 40...+60 °C
Backlash no load	≤ 3°	
Radial load 10 mm from gear flange	≤ 4.9 N	
Shaft axial load	≤ 4.9 N	
Shaft press fit force	≤ 14.7 N	
Radial play	≤ 0.08 mm	
Thrust play	≤ 0.2 mm	
Manufacturing quality standards	ISO 9001	
RoHS compliance	Yes	
CE label	No	Yes
UL approval	No	Yes

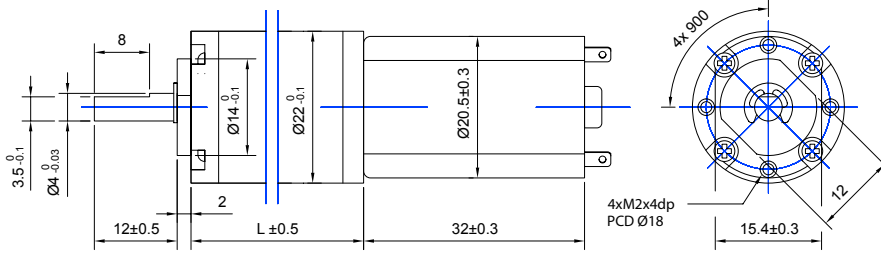
MOTOR DATA

Nominal voltage (V)	12	24
No load speed (rpm)	8000	13500
No load current (mA)	≤ 50	≤ 50
Nominal speed (rpm)	6200	11000
Nominal torque (mNm)	0.6	0.9
Nominal current (mA)	≤ 85	≤ 90
Stall torque (mNm)	2.6	4.3
Starting current (A)	0.20	0.28
Output (W)	0.4	1
Length (mm)	26.5	26.5
Weight (g)	18	18

GEAR HEAD DATA

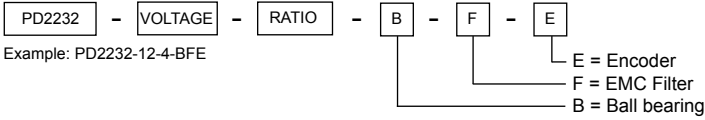
Reduction	4:1	14:1	19:1	29:1	62:1	72:1	84:1	104:1	128:1	157:1	231:1	316:1	370:1	455:1	561:1	690:1	1014:1	1621:1	1996:1	3027:1
Max. continuous torque (mNm)	78.5	118	118	118	157	157	157	157	157	157	196	196	196	196	196	196	235	235	235	235
Intermittently permissible torque (mNm)	235	353	353	353	471	471	471	471	471	471	588	588	588	588	588	588	706	706	706	706
Efficiency %	80	70	70	70	60	60	60	60	60	60	50	50	50	50	50	50	40	40	40	40
Length L (mm)	15.05	18.70	18.70	18.70	22.35	22.35	22.35	22.35	22.35	22.35	26.00	26.00	26.00	26.00	26.00	26.00	29.65	29.65	29.65	29.65
Weight (g)	19	23	23	23	27	27	27	27	27	27	31	31	31	31	31	31	35	35	35	35

PD2232 Ø22 mm carbon brushes 1.5 W

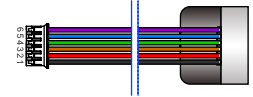


Unit: mm

MODEL NO. DESIGNATIONS



ENCODER
Page 21



GEAR MOTOR DATA

Reduction	4:1	14:1	16:1	19:1	53:1	62:1	72:1	84:1	104:1	198:1	231:1	270:1	316:1	370:1	455:1	742:1	1014:1	1249:1	1621:1	1996:1
Nominal torque 12 V (mNm)	7.6	21.1	24.5	28.9	68.2	79.4	93.2	108	134	206	245	245	245	245	245	294	294	294	294	294
Nominal speed 12 (rpm)	1450	470	405	348	127	109	93	79	64	34	29	25	22	19	15.5	9.5	7.4	6.0	4.6	3.8
Nominal torque 24 V (mNm)	7.6	21.1	24.5	28.9	68.2	79.4	93.2	108	134	206	245	245	245	245	245	294	294	294	294	294
Nominal speed 24 (rpm)	1600	515	450	384	140	120	103	88	71	37	32	28	23.5	21	17.5	10.5	8	6.6	5	4.2
Length (mm)	46	50	50	50	54	54	54	54	54	54	57	57	57	57	57	57	61	61	61	61
Weight (g)	58	62	62	62	66	66	66	66	66	66	71	71	71	71	71	71	75	75	75	75

GEAR MOTOR FEATURES AND STANDARD DATA

	STANDARD	CUSTOMIZATION OPTIONS
Type	Planetary brush dc gear motor	
Motor type	Iron core, brush commutation	Winding parameters
Motor brush type	Carbon brushes	
Motor terminals	Soldering ears	Wiring harnesses, cables and connectors
EMC filter	Yes	
Gears	Straight teeth metal gears produced by milling process	Plastic
Motor pinion gear	Bakelite	Metal
Bearing	Ball bearing	
Shaft	Hardened stainless steel	Dimensions
Encoder option	Magnetic encoder (to order as option)	Through shaft dimensions and screw holes
Operating temperature	-10...+60 °C	-40...+60 °C
Backlash no load	≤ 3°	
Radial load 10 mm from gear flange	≤ 9.8 N	
Shaft axial load	≤ 5.9 N	
Shaft press fit force	≤ 49 N	
Radial play	≤ 0.05 mm	
Thrust play	≤ 0.2 mm	
Manufacturing quality standards	ISO 9001	
RoHS compliance	Yes	
CE label	No	Yes
UL approval	No	Yes

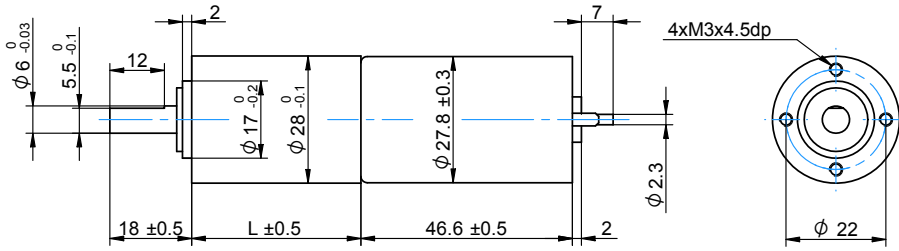
MOTOR DATA

Nominal voltage (V)	12	24
No load speed (rpm)	8000	9000
No load current (mA)	≤ 70	≤ 40
Nominal speed (rpm)	6700	7400
Nominal torque (mNm)	2.2	2.2
Nominal current (mA)	≤ 200	≤ 110
Stall torque (mNm)	13	13
Starting current (A)	0.97	0.55
Output (W)	1.5	1.7
Length (mm)	32	32
Weight (g)	32	32

GEAR HEAD DATA

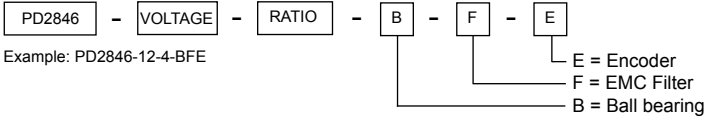
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Max. continuous torque (mNm)	98	147	147	147	196	196	196	196	196	196	245	245	245	245	245	245	294	294	294	294
Intermittently permissible torque (mNm)	294	441	441	441	588	588	588	588	588	588	735	735	735	735	735	735	883	883	883	883
Efficiency %	80	70	70	70	60	60	60	60	60	60	50	50	50	50	50	50	40	40	40	40
Length L (mm)	14.4	18.05	18.05	18.05	21.7	21.7	21.7	21.7	21.7	21.7	25.35	25.35	25.35	25.35	25.35	25.35	29	29	29	29
Weight (g)	26	30	30	30	34	34	34	34	49	59	59	59	59	59	59	64	64	64	64	64

PD2846 Ø28 mm carbon brushes 4.2 W / 5 W



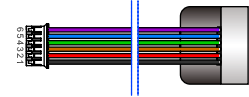
Unit: mm

MODEL NO. DESIGNATIONS



ENCODER

Page 21



GEAR MOTOR DATA

	5:1	14:1	19:1	27:1	35:1	51:1	71:1	100:1	139:1	189:1	264:1	516:1	721:1	939:1
Reduction	5:1	14:1	19:1	27:1	35:1	51:1	71:1	100:1	139:1	189:1	264:1	516:1	721:1	939:1
Nominal torque 12V (mNm)	31.4	73.5	98.1	137	186	235	324	461	647	726	981	981	981	981
Nominal speed 12V (rpm)	1000	375	270	193	148	102	73	52	37.3	27.5	19.7	10.5	7.5	5.7
Nominal torque 24V (mNm)	37.3	88.3	118	167	226	275	392	549	765	863	981	981	981	981
Nominal speed 24V (rpm)	990	370	265	191	147	101	72	51.5	36.9	27.2	19.3	10.4	7.4	5.7
Length (mm)	71.1	77.5	77.5	77.5	77.5	83.9	83.9	83.9	83.9	90.3	90.3	90.3	90.3	57
Weight (g)	163	173	173	173	173	186	186	186	186	200	200	200	200	200

GEAR MOTOR FEATURES AND STANDARD DATA

	STANDARD	CUSTOMIZATION OPTIONS
Type	Planetary brush dc gear motor	
Motor type	Iron core, brush commutation	Winding parameters
Motor brush type	Carbon brushes	
Motor terminals	Soldering ears	Wiring harnesses, cables and connectors
EMC filter	Yes	
Gears	Plastic/Powder metal	
Motor pinion gear	Metal	
Bearing	Ball bearing	
Shaft	Hardened stainless steel	Dimensions
Encoder option	Magnetic encoder (to order as option)	Through shaft dimensions and screw holes
Operating temperature	-10...+60 °C	-40...+60 °C
Backlash no load	≤ 2.5°	
Radial load 10 mm from gear flange	≤ 34.3 N	
Shaft axial load	≤ 24.5 N	
Shaft press fit force	≤ 98.1 N	
Radial play	≤ 0.05 mm	
Thrust play	≤ 0.3 mm	
Manufacturing quality standards	ISO 9001	
RoHS compliance	Yes	
CE label	No	Yes
UL approval	No	Yes

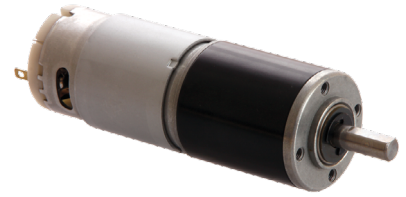
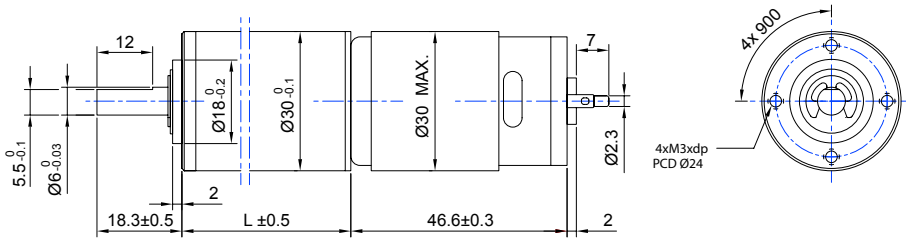
MOTOR DATA

Nominal voltage (V)	12	24
No load speed (rpm)	6000	6000
No load current (mA)	≥ 130	≥ 80
Nominal speed (rpm)	5200	5140
Nominal torque (mNm)	7.7	9.2
Nominal current (mA)	≥ 500	≥ 300
Stall torque (mNm)	71	64
Starting current (A)	3.7	1.7
Output (W)	4.2	5.0
Length (mm)	46.6	46.6
Weight (g)	93	91

GEAR HEAD DATA

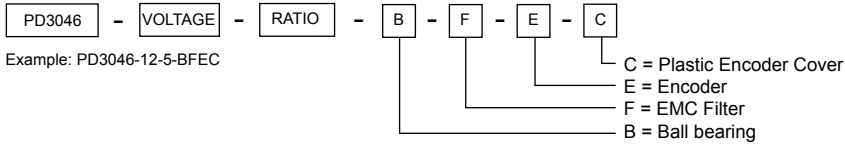
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Reduction	5:1	14:1	19:1	27:1	35:1	51:1	71:1	100:1	139:1	189:1	264:1	516:1	721:1	939:1
Max. continuous torque (mNm)	196	294	294	392	392	588	588	784	784	981	981	981	981	981
Intermittently permissible torque (mNm)	588	883	883	1177	1177	1765	1765	2354	2354	2942	2942	2942	2942	2942
Efficiency %	80	70	70	70	70	60	60	60	60	50	50	50	50	50
Length L (mm)	14.4	18.05	18.05	18.05	21.7	21.7	21.7	21.7	21.7	21.7	25.35	25.35	25.35	25.35
Weight (g)	70	80	80	80	80	93	93	93	93	107	107	107	107	107

PD3046 Ø30 mm carbon brushes 7 W



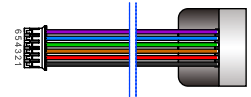
Unit: mm

MODEL NO. DESIGNATIONS



ENCODER

Page 21



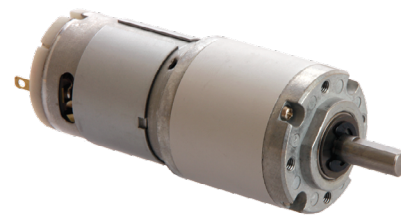
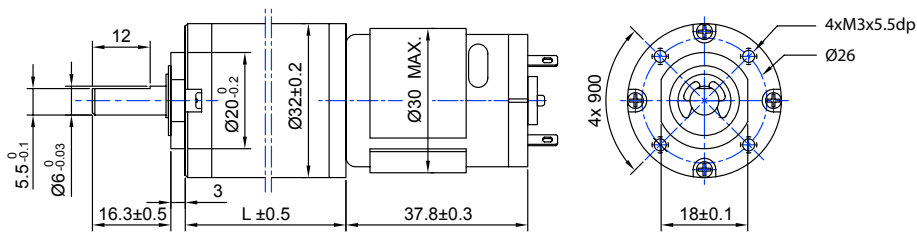
GEAR MOTOR DATA												
Reduction	5:1	14:1	19:1	27:1	51:1	71:1	100:1	139:1	189:1	264:1	516:1	721:1
Nominal torque 12 V (mNm)	44.1	108	147	206	333	461	647	785	981	981	981	981
Nominal speed 12 V (rpm)	1120	430	310	221	117	83	60	45	32	25	13.2	9.6
Nominal torque 24 V (mNm)	53	117	167	235	392	539	765	785	981	981	981	981
Nominal speed 24 V (rpm)	1150	445	320	229	121	87	62	46	34.5	26	13.5	9.8
Length (mm)	70	77	77	77	83	83	83	83	89	89	89	89
Weight (g)	188	201	201	201	216	216	216	216	231	231	231	231

GEAR MOTOR FEATURES AND STANDARD DATA		
	STANDARD	CUSTOMIZATION OPTIONS
Type	Planetary brush dc gear motor	
Motor type	Iron core, brush commutation	Winding parameters
Motor brush type	Carbon brushes	
Motor terminals	Soldering ears	Wiring harnesses, cables and connectors
EMC filter	Yes	
Gears	Straight teeth metal gears produced by milling process	Plastic
Motor pinion gear	Bakelite	Metal
Bearing	Ball bearing	
Shaft	Hardened stainless steel	Dimensions
Encoder option	Magnetic encoder (to order as option)	Through shaft dimensions and screw holes
Operating temperature	-10...+60 °C	-40...+60 °C
Backlash no load	≤ 2.5°	
Radial load 10 mm from gear flange	≤ 34.4 N	
Shaft axial load	≤ 24.5 N	
Shaft press fit force	≤ 98.1 N	
Radial play	≤ 0.05 mm	
Thrust play	≤ 0.3 mm	
Manufacturing quality standards	ISO 9001	
RoHS compliance	Yes	
CE label	No	Yes
UL approval	No	Yes

MOTOR DATA		
Nominal voltage (V)	12	24
No load speed (rpm)	7300	7300
No load current (mA)	≤ 150	≤ 80
Nominal speed (rpm)	5950	6160
Nominal torque (mNm)	10.7	12.7
Nominal current (mA)	≤ 900	≤ 500
Stall torque (mNm)	84	89
Starting current (A)	5.6	2.9
Output (W)	7	8.5
Length (mm)	46.6	46.6
Weight (g)	110	110

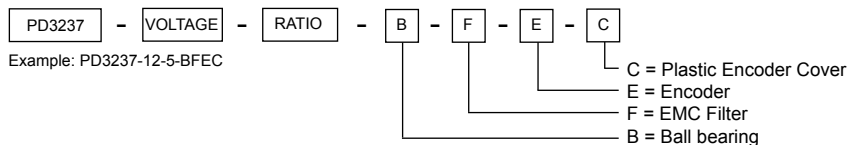
GEAR HEAD DATA												
Reduction	5:1	14:1	19:1	27:1	51:1	71:1	100:1	139:1	189:1	264:1	516:1	721:1
Max. continuous torque (mNm)	196	294	294	392	588	588	785	785	981	981	981	981
Intermittently permissible torque (mNm)	588	883	883	1177	1765	1765	2354	2354	2942	2942	2942	2942
Efficiency %	80	70	70	70	60	60	60	60	50	50	50	50
Length L (mm)	23	30	30	30	36.4	36.4	36.4	36.4	42.8	42.8	42.8	42.8
Weight (g)	78	91	91	91	106	106	106	106	121	121	121	121

PD3237 Ø32 mm carbon brushes 4 W



Unit: mm

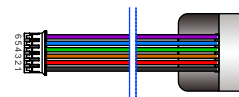
MODEL NO. DESIGNATIONS



Example: PD3237-12-5-BFEC

ENCODER

Page 21



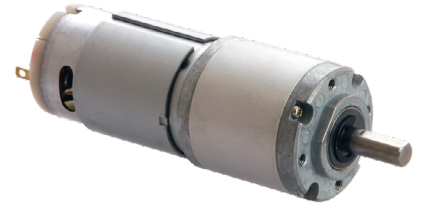
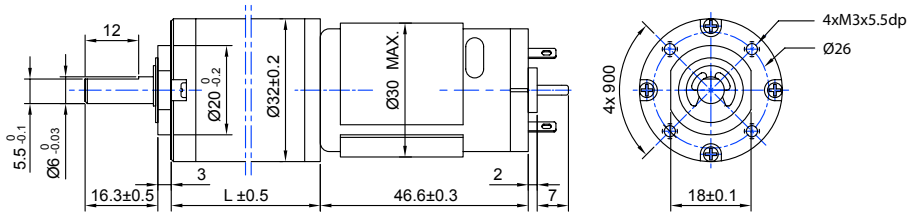
GEAR MOTOR DATA												
Reduction	5:1	14:1	19:1	27:1	51:1	71:1	100:1	139:1	189:1	264:1	516:1	721:1
Nominal torque 12 V (mNm)	29.4	73.5	98.1	137	226	324	451	637	716	981	1177	1177
Nominal speed 12 (rpm)	995	373	270	195	104	74	53	38	28	20	11.2	8.3
Nominal torque 24 V (mNm)	29.4	68.6	98.1	137	216	304	431	598	677	951	1177	1177
Nominal speed 24 (rpm)	990	370	265	171	103	74	53	38	28	20	11.2	8.3
Length (mm)	58	65	65	65	71	71	71	71	78	78	78	78
Weight (g)	174	194	194	194	219	219	219	219	245	245	245	245

GEAR MOTOR FEATURES AND STANDARD DATA		
	STANDARD	CUSTOMIZATION OPTIONS
Type	Planetary brush dc gear motor	
Motor type	Iron core, brush commutation	Winding parameters
Motor brush type	Carbon brushes	
Motor terminals	Soldering ears	Wiring harnesses, cables and connectors
EMC filter	Yes	
Gears	Straight teeth metal gears produced by milling process	Plastic
Motor pinion gear	Bakelite	Metal
Bearing	Ball bearing	
Shaft	Hardened stainless steel	Dimensions
Encoder option	Magnetic encoder (to order as option)	Through shaft dimensions and screw holes
Operating temperature	-10...+60 °C	- 40...+60 °C
Backlash no load	≤ 2.5°	
Radial load 10 mm from gear flange	≤ 34.3 N	
Shaft axial load	≤ 24.5 N	
Shaft press fit force	≤ 98.1 N	
Radial play	≤ 0.05 mm	
Thrust play	≤ 0.3 mm	
Manufacturing quality standards	ISO 9001	
RoHS compliance	Yes	
CE label	No	Yes
UL approval	No	Yes

MOTOR DATA		
Nominal voltage (V)	12	24
No load speed (rpm)	6500	6500
No load current (mA)	≤ 150	≤ 85
Nominal speed (rpm)	5290	5250
Nominal torque (mNm)	7.6	7.3
Nominal current (mA)	≤ 530	≤ 250
Stall torque (mNm)	36	38
Starting current (A)	2.1	1.1
Output (W)	4.22	3.97
Length (mm)	37.8	37.8
Weight (g)	73	73

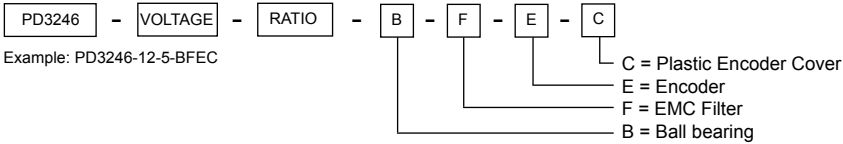
GEAR HEAD DATA												
Reduction	5:1	14:1	19:1	27:1	51:1	71:1	100:1	139:1	189:1	264:1	516:1	721:1
Max. continuous torque (mNm)	196	392	392	588	785	785	981	981	1177	1177	1177	1177
Intermittently permissible torque (mNm)	588	1177	1177	1765	2354	2354	2942	2942	3530	3530	3530	3530
Efficiency %	80	70	70	70	60	60	60	60	50	50	50	50
Length L (mm)	20.6	27	27	27	33.4	33.4	33.4	33.4	39.8	39.8	39.8	39.8
Weight (g)	101	121	121	121	146	146	146	146	172	172	172	172

PD3246 Ø32 mm carbon brushes 7 W



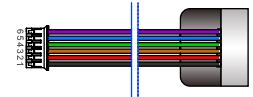
Unit: mm

MODEL NO. DESIGNATIONS



ENCODER

Page 21



GEAR MOTOR DATA

	5:1	14:1	19:1	27:1	35:1	51:1	71:1	100:1	139:1	189:1	264:1	516:1	721:1	939:1
Reduction	5:1	14:1	19:1	27:1	35:1	51:1	71:1	100:1	139:1	189:1	264:1	516:1	721:1	939:1
Nominal torque 12 V (mNm)	44.1	108	147	206	265	333	461	647	892	981	1177	1177	1177	1177
Nominal speed 12 (rpm)	1140	430	310	221	170	117	83	60	44	32	24	12.9	9.5	7.2
Nominal torque 24 V (mNm)	53	118	167	235	304	392	539	765	981	1177	1177	1177	1177	1177
Nominal speed 24 (rpm)	1170	445	320	229	176	121	87	63	45	34	25	13	9.6	7.2
Length (mm)	67.2	73.6	73.6	73.6	73.6	80.0	80.0	80.0	80.0	86.4	86.4	86.4	86.4	86.4
Weight (g)	211	231	231	231	231	256	256	256	256	282	282	282	282	282

GEAR MOTOR FEATURES AND STANDARD DATA

	STANDARD	CUSTOMIZATION OPTIONS
Type	Planetary brush dc gear motor	
Motor type	Iron core, brush commutation	Winding parameters
Motor brush type	Carbon brushes	
Motor terminals	Soldering ears	Wiring harnesses, cables and connectors
EMC filter	Yes	
Gears	Straight teeth metal gears produced by milling process	Plastic
Motor pinion gear	Bakelite	Metal
Bearing	Ball bearing	
Shaft	Hardened stainless steel	Dimensions
Encoder option	Magetic encoder (to order as option)	Through shaft dimensions and screw holes
Operating temperature	-10...+60 °C	- 40...+60 °C
Backlash no load	≤ 2.5°	
Radial load 10 mm from gear flange	≤ 34.3 N	
Shaft axial load	≤ 24.5 N	
Shaft press fit force	≤ 98.1 N	
Radial play	≤ 0.05 mm	
Thrust play	≤ 0.3 mm	
Manufacturing quality standards	ISO 9001	
RoHS compliance	Yes	
CE label	No	Yes
UL approval	No	Yes

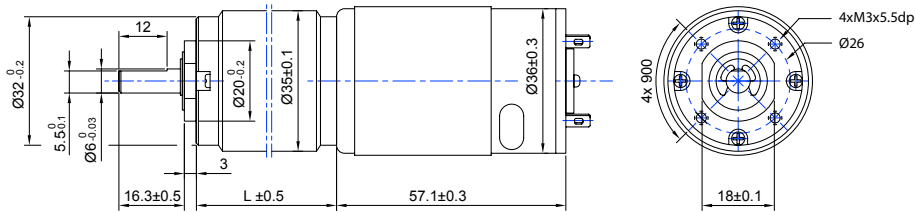
MOTOR DATA

	12	24
Nominal voltage (V)	12	24
No load speed (rpm)	7300	7300
No load current (mA)	≤ 150	≤ 80
Nominal speed (rpm)	5950	6160
Nominal torque (mNm)	11	13
Nominal current (mA)	≤ 900	≤ 500
Stall torque (mNm)	84	89
Starting current (A)	5.5	2.9
Output (W)	7	8.2
Length (mm)	46.6	46.6
Weight (g)	110	110

GEAR HEAD DATA

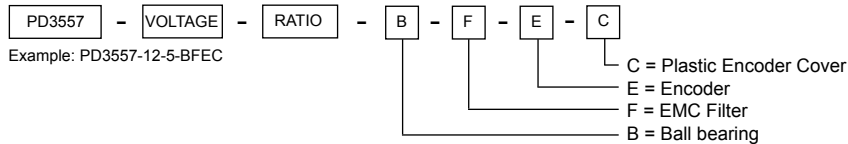
	5:1	14:1	19:1	27:1	35:1	51:1	71:1	100:1	139:1	189:1	264:1	516:1	721:1	939:1
Reduction	5:1	14:1	19:1	27:1	35:1	51:1	71:1	100:1	139:1	189:1	264:1	516:1	721:1	939:1
Max. continuous torque (mNm)	196	392	392	588	588	785	785	981	981	1177	1177	1177	1177	1177
Intermittently permissible torque (mNm)	588	1177	1177	1765	1765	2354	2354	2942	2942	3530	3530	3530	3530	3530
Efficiency %	80	70	70	70	70	60	60	60	60	50	50	50	50	50
Length L (mm)	20.6	27	27	27	27.0	33.4	33.4	33.4	33.4	39.8	39.8	39.8	39.8	39.8
Weight (g)	101	121	121	121	121	146	146	146	146	172	172	172	172	172

PD3557 Ø35 mm carbon brushes 12 W



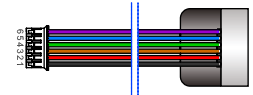
Unit: mm

MODEL NO. DESIGNATIONS



ENCODER

Page 21



GEAR MOTOR DATA

	5:1	14:1	19:1	27:1	51:1	71:1	100:1	139:1	189:1	264:1	516:1	721:1
Reduction	5:1	14:1	19:1	27:1	51:1	71:1	100:1	139:1	189:1	264:1	516:1	721:1
Nominal torque 12 V (mNm)	98	235	324	461	745	785	981	981	1177	1177	1177	1177
Nominal speed 12 (rpm)	950	359	257	183	97	71.5	52	39	29	21	11	8
Nominal torque 24 V (mNm)	98	226	326	441	716	785	981	981	1177	1177	1177	1177
Nominal speed 24 (rpm)	990	375	268	192	101	74.5	54	40	29.5	22	11.5	8
Length (mm)	79	86	86	86	92	92	92	92	98	98	98	98
Weight (g)	328	362	362	362	396	396	396	396	430	430	430	430

GEAR MOTOR FEATURES AND STANDARD DATA

	STANDARD	CUSTOMIZATION OPTIONS
Type	Planetary brush dc gear motor	
Motor type	Iron core, brush commutation	Winding parameters
Motor brush type	Carbon brushes	
Motor terminals	Soldering ears	Wiring harnesses, cables and connectors
EMC filter	Yes	
Gears	Straight teeth metal gears produced by milling process	Plastic
Motor pinion gear	Bakelite	Metal
Bearing	Ball bearing	
Shaft	Hardened stainless steel	Dimensions
Encoder option	Magnetic encoder (to order as option)	Through shaft dimensions and screw holes
Operating temperature	-10...+60 °C	-40...+60 °C
Backlash no load	≤ 2.5°	
Radial load 10 mm from gear flange	≤ 34.3 N	
Shaft axial load	≤ 24.5 N	
Shaft press fit force	≤ 98.1 N	
Radial play	≤ 0.05 mm	
Thrust play	≤ 0.3 mm	
Manufacturing quality standards	ISO 9001	
RoHS compliance	Yes	
CE label	No	Yes
UL approval	No	Yes

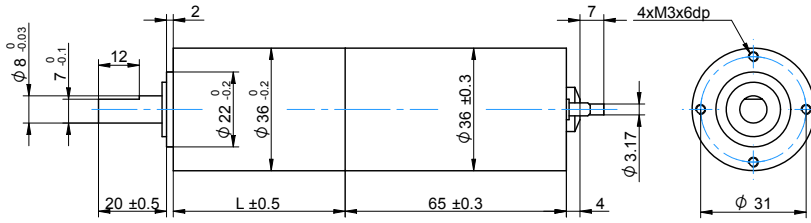
MOTOR DATA

	12	24
Nominal voltage (V)	12	24
No load speed (rpm)	6000	6000
No load current (mA)	≤ 250	≤ 130
Nominal speed (rpm)	4930	5150
Nominal torque (mNm)	24.5	23.5
Nominal current (mA)	≤ 1600	≤ 750
Stall torque (mNm)	180	188
Starting current (A)	9.7	5.5
Output (W)	12.8	12.7
Length (mm)	57.1	57.1
Weight (g)	220	220

GEAR HEAD DATA

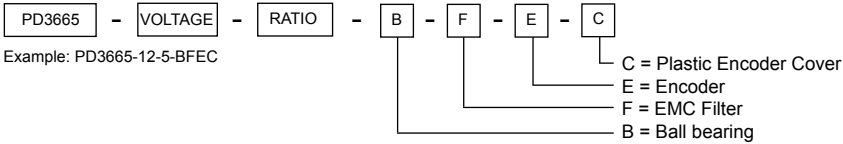
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Reduction	5:1	14:1	19:1	27:1	51:1	71:1	100:1	139:1	189:1	264:1	516:1	721:1
Max. continuous torque (mNm)	196	392	392	588	785	785	981	981	1177	1177	1177	1177
Intermittently permissible torque (mNm)	588	1177	1177	1765	2354	2354	2942	2942	3530	3530	3530	3530
Efficiency %	80	70	70	70	60	60	60	60	50	50	50	50
Length L (mm)	22.1	28.5	28.5	28.5	34.9	34.9	34.9	34.9	41.3	41.3	41.3	41.3
Weight (g)	108	142	142	142	176	176	176	176	210	210	210	210

PD3665 Ø36 mm carbon brushes 18W



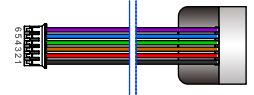
Unit: mm

MODEL NO. DESIGNATIONS



ENCODER

Page 21



GEAR MOTOR DATA

	5:1	14:1	19:1	27:1	51:1	71:1	100:1	139:1	189:1	264:1	516:1	721:1
Reduction	5:1	14:1	19:1	27:1	51:1	71:1	100:1	139:1	189:1	264:1	516:1	721:1
Nominal torque 12 V (mNm)	108	245	353	490	804	1128	1569	1961	2452	2452	2942	2942
Nominal speed 12 (rpm)	1250	475	340	243	129	92	66	47.2	34.8	25.1	13.2	9.5
Nominal torque 24 V (mNm)	108	265	373	520	853	1177	1667	1961	2452	2452	2942	2942
Nominal speed 24 (rpm)	1240	470	335	240	127	91	65	46.5	34.3	24.8	13	9.4
Length (mm)	98.1	106.8	106.8	106.8	115.5	115.5	115.5	115.5	124.2	124.2	124.2	124.2
Weight (g)	354	394	394	394	434	434	434	434	474	474	474	474

GEAR MOTOR FEATURES AND STANDARD DATA

	STANDARD	CUSTOMIZATION OPTIONS
Type	Planetary brush dc gear motor	
Motor type	Iron core, brush commutation	Winding parameters
Motor brush type	Carbon brushes	
Motor terminals	Soldering ears	Wiring harnesses, cables and connectors
EMC filter	Yes	
Gears	Plastic/Powder metal	
Motor pinion gear	Metal	
Bearing	Ball bearing	
Shaft	Hardened stainless steel	Dimensions
Encoder option	Magetic encoder (to order as option)	Through shaft dimensions and screw holes
Operating temperature	-10...+60 °C	- 40...+60 °C
Backlash no load	≤ 3°	
Radial load 10 mm from gear flange	≤ 78.5 N	
Shaft axial load	≤ 29.4 N	
Shaft press fit force	≤ 147 N	
Radial play	≤ 0.05 mm	
Thrust play	≤ 0.3 mm	
Manufacturing quality standards	ISO 9001	
RoHS compliance	Yes	
CE label	No	Yes
UL approval	No	Yes

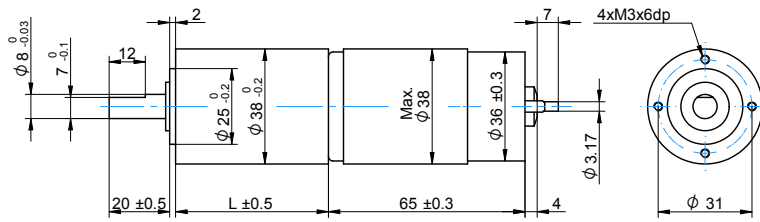
MOTOR DATA

Nominal voltage (V)	12	24
No load speed (rpm)	7500	7500
No load current (mA)	≤ 300	≤ 210
Nominal speed (rpm)	6570	6480
Nominal torque (mNm)	26.5	28.0
Nominal current (mA)	≤ 2050	≤ 1050
Stall torque (mNm)	238	256
Starting current (A)	15.7	8.3
Output (W)	18.23	18.96
Length (mm)	65	65
Weight (g)	222	224

GEAR HEAD DATA

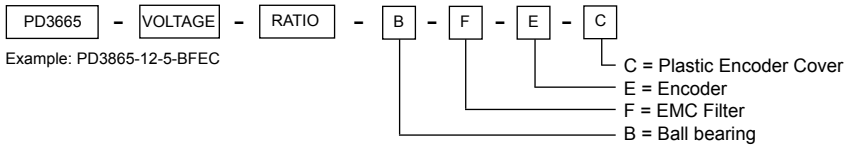
	5:1	14:1	19:1	27:1	51:1	71:1	100:1	139:1	189:1	264:1	516:1	721:1
Reduction	5:1	14:1	19:1	27:1	51:1	71:1	100:1	139:1	189:1	264:1	516:1	721:1
Max. continuous torque (mNm)	290	780	780	980	1770	1770	1960	1960	2450	2450	2940	2940
Intermittently permissible torque (mNm)	880	2350	2350	2940	5300	5300	5890	5900	7360	7360	8830	8830
Efficiency %	80	70	70	70	60	60	60	60	50	50	50	50
Length L (mm)	33.1	41.8	41.8	41.8	50.5	50.5	50.5	50.5	59.2	59.2	59.2	59.2
Weight (g)	132	172	172	172	212	212	212	212	252	252	252	252

PD3865 Ø38 mm carbon brushes 18 W



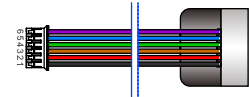
Unit: mm

MODEL NO. DESIGNATIONS



ENCODER

Page 21



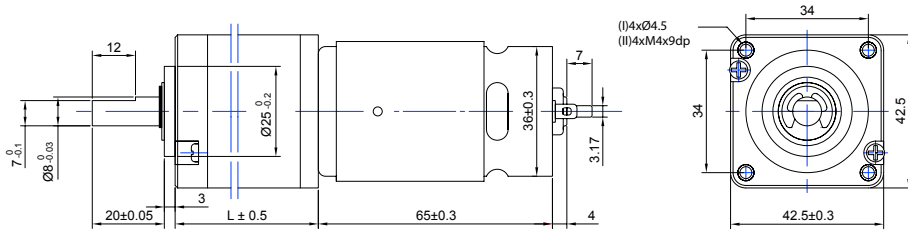
GEAR MOTOR DATA												
Reduction	5:1	14:1	19:1	27:1	51:1	71:1	100:1	139:1	189:1	264:1	516:1	721:1
Nominal torque 12 V (mNm)	98	235	324	461	746	981	1472	1962	2256	2453	2943	2943
Nominal speed 12 (rpm)	1100	420	300	210	110	81	58	41	30	22.5	11.4	8.4
Nominal torque 24 V (mNm)	108	265	363	510	834	1177	1570	1962	2453	2453	2943	2943
Nominal speed 24 (rpm)	1050	390	280	200	105	76	55	41	29	22.5	11.4	8.4
Length (mm)	98.1	106.8	106.8	106.8	115.5	115.5	115.5	115.5	124.2	124.2	124.2	124.2
Weight (g)	413	461	461	461	509	509	509	509	557	557	557	557

GEAR MOTOR FEATURES AND STANDARD DATA		
	STANDARD	CUSTOMIZATION OPTIONS
Type	Planetary brush dc gear motor	
Motor type	Iron core, brush commutation	Winding parameters
Motor brush type	Carbon brushes	
Motor terminals	Soldering ears	Wiring harnesses, cables and connectors
EMC filter	Yes	
Gears	Plastic/Powder metal	
Motor pinion gear	Metal	
Bearing	Ball bearing	
Shaft	Hardened stainless steel	Dimensions
Encoder option	Magetic encoder (to order as option)	Through shaft dimensions and screw holes
Operating temperature	-10...+60 °C	- 40...+60 °C
Backlash no load	≤ 3°	
Radial load 10 mm from gear flange	≤ 78.5 N	
Shaft axial load	≤ 29.4 N	
Shaft press fit force	≤ 147 N	
Radial play	≤ 0.05 mm	
Thrust play	≤ 0.3 mm	
Manufacturing quality standards	ISO 9001	
RoHS compliance	Yes	
CE label	No	Yes
UL approval	No	Yes

MOTOR DATA		
Nominal voltage (V)	12	24
No load speed (rpm)	6400	6400
No load current (mA)	≤ 300	≤ 160
Nominal speed (rpm)	5800	5500
Nominal torque (mNm)	24.5	27.5
Nominal current (mA)	≤ 1600	≤ 900
Stall torque (mNm)	288	294
Starting current (A)	16.2	8.2
Output (W)	18.23	18.96
Length (mm)	65	65
Weight (g)	264	266

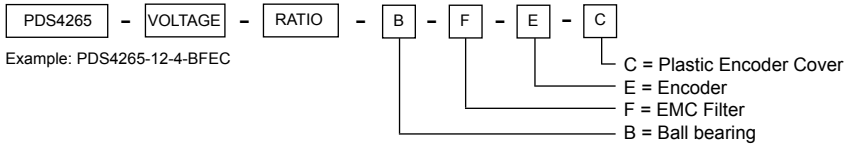
GEAR HEAD DATA												
Reduction	5:1	14:1	19:1	27:1	51:1	71:1	100:1	139:1	189:1	264:1	516:1	721:1
Max. continuous torque (mNm)	290	780	780	980	1770	1770	1960	1960	2450	2450	2940	2940
Intermittently permissible torque (mNm)	880	2350	2350	2940	5300	5300	5890	5900	7360	7360	8830	8830
Efficiency %	80	70	70	70	60	60	60	60	50	50	50	50
Length L (mm)	33.1	41.8	41.8	41.8	50.5	50.5	50.5	50.5	59.2	59.2	59.2	59.2
Weight (g)	132	172	172	172	212	212	212	212	252	252	252	252

PDS4265 Ø42 mm carbon brushes 16 W



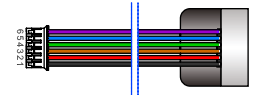
Unit: mm

MODEL NO. DESIGNATIONS



ENCODER

Page 21



GEAR MOTOR DATA

	4:1	14:1	17:1	24:1	49:1	61:1	84:1	104:1	144:1	212:1	294:1	504:1	624:1	720:1	864:1
Reduction	4:1	14:1	17:1	24:1	49:1	61:1	84:1	104:1	144:1	212:1	294:1	504:1	624:1	720:1	864:1
Nominal torque 12 V (mNm)	98	294	353	510	902	1079	1471	1863	1961	2452	2452	2942	2942	2942	2942
Nominal speed 12 (rpm)	1250	363	293	212	103	83.5	60.5	49	38	25.4	18.9	11.2	8.8	8	6.5
Nominal torque 24 V (mNm)	88	255	304	441	785	981	1373	1667	1961	2452	2452	2942	2942	2942	2942
Nominal speed 24 (rpm)	1290	375	302	218	107	86.5	62.5	50.5	39	26.2	18.8	11.2	8.8	8	6.5
Length (mm)	91.15	97.95	97.95	97.95	104.75	104.75	104.75	104.75	104.75	111.45	111.45	111.45	111.45	111.45	111.45
Weight (g)	456	516	516	516	571	571	571	571	571	626	626	626	626	626	626

GEAR MOTOR FEATURES AND STANDARD DATA

	STANDARD	CUSTOMIZATION OPTIONS
Type	Planetary brush dc gear motor	
Motor type	Iron core, brush commutation	Winding parameters
Motor brush type	Carbon brushes	
Motor terminals	Soldering ears	Wiring harnesses, cables and connectors
EMC filter	Yes	
Gears	Straight teeth metal gears produced by milling process	Plastic
Motor pinion gear	Bakelite	Metal
Bearing	Ball bearing	
Shaft	Hardened stainless steel	Dimensions
Encoder option	Magnetic encoder (to order as option)	Through shaft dimensions and screw holes
Operating temperature	-10...+60 °C	-40...+60 °C
Backlash no load	≤ 3°	
Radial load 10 mm from gear flange	≤ 78.5 N	
Shaft axial load	≤ 29.4 N	
Shaft press fit force	≤ 147 N	
Radial play	≤ 0.05 mm	
Thrust play	≤ 0.3 mm	
Manufacturing quality standards	ISO 9001	
RoHS compliance	Yes	
CE label	No	Yes
UL approval	No	Yes

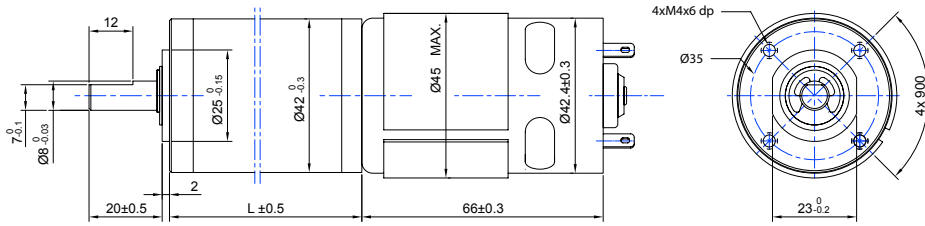
MOTOR DATA

Nominal voltage (V)	12	24
No load speed (rpm)	6000	6000
No load current (mA)	≤ 350	≤ 170
Nominal speed (rpm)	5090	5250
Nominal torque (mNm)	31	27
Nominal current (mA)	≤ 2100	≤ 900
Stall torque (mNm)	269	243
Starting current (A)	15	7
Output (W)	17.1	15.6
Length (mm)	65	65
Weight (g)	266	266

GEAR HEAD DATA

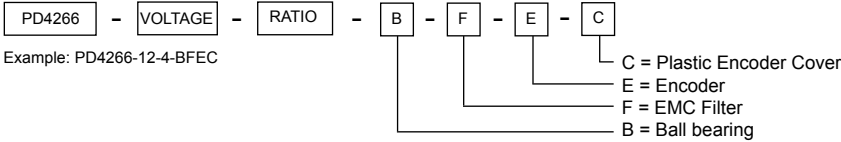
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Reduction	4:1	14:1	17:1	24:1	49:1	61:1	84:1	104:1	144:1	212:1	294:1	504:1	624:1	720:1	864:1
Max. continuous torque (mNm)	392	785	785	785	1471	1471	1471	1961	1961	2452	2452	2942	2942	2942	2942
Intermittently permissible torque (mNm)	1177	2354	2354	2354	4413	4413	4413	5884	5884	7355	7355	8826	8826	8826	8826
Efficiency %	80	70	70	70	60	60	60	60	60	50	50	50	50	50	50
Length L (mm)	26.15	32.95	32.95	32.95	39.75	39.75	39.75	39.75	39.75	46.45	46.45	46.45	46.45	46.45	46.45
Weight (g)	190	250	250	250	305	305	305	305	305	360	360	360	360	360	360

PD4266 Ø42 mm carbon brushes 35 W



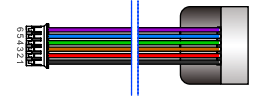
Unit: mm

MODEL NO. DESIGNATIONS



Example: PD4266-12-4-BFEC

ENCODER
Page 21



GEAR MOTOR DATA

Reduction	4:1	14:1	17:1	24:1	49:1	61:1	84:1	104:1	144:1	212:1	294:1	504:1	624:1	720:1	864:1	1062:1	1470:1	2500:1	3000:1	3600:1
Nominal torque 12 V (mNm)	216	637	863	863	1765	1765	1765	1961	1961	2452	2942	2942	2942	2942	2942	2942	2942	2942	2942	2942
Nominal speed 12 V (rpm)	1400	405	325	248	120	98	76	63	45	31	22	13.5	10.9	9.5	8	6.5	4.6	2.7	2.3	1.9
Nominal torque 24 V (mNm)	177	530	647	785	1569	1765	1765	1961	1961	2452	2452	2942	2942	2942	2942	2942	2942	2942	2942	2942
Nominal speed 24 V (rpm)	1445	420	340	246	122	102	77.5	63	47	31	21.8	13.5	10.9	9.5	8	6.5	4.6	2.7	2.3	1.9
Length (mm)	99	105	105	105	112	112	112	112	112	119	119	119	119	119	119	125	125	125	125	125
Weight (g)	499	551	551	551	591	591	591	591	591	641	641	641	641	641	641	686	686	686	686	686

GEAR MOTOR FEATURES AND STANDARD DATA

	STANDARD	CUSTOMIZATION OPTIONS
Type	Planetary brush dc gear motor	
Motor type	Iron core, brush commutation	Winding parameters
Motor brush type	Carbon brushes	
Motor terminals	Soldering ears	Wiring harnesses, cables and connectors
EMC filter	Yes	
Gears	Straight teeth metal gears produced by milling process	Plastic
Motor pinion gear	Bakelite	Metal
Bearing	Ball bearing	
Shaft	Hardened stainless steel	Dimensions
Encoder option	Magnetic encoder (to order as option)	Through shaft dimensions and screw holes
Operating temperature	-10...+60 °C	- 40...+60 °C
Backlash no load	≤ 3°	
Radial load 10 mm from gear flange	≤ 78.5 N	
Shaft axial load	≤ 29.4 N	
Shaft press fit force	≤ 147 N	
Radial play	≤ 0.05 mm	
Thrust play	≤ 0.3 mm	
Manufacturing quality standards	ISO 9001	
RoHS compliance	Yes	
CE label	No	Yes
UL approval	No	Yes

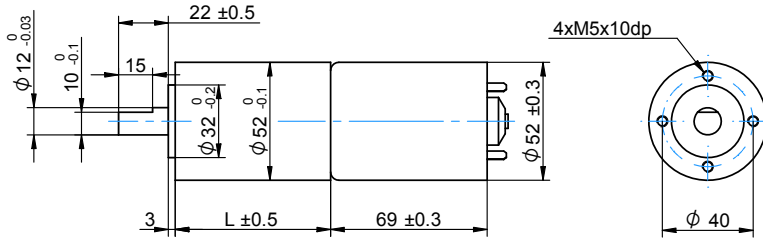
MOTOR DATA

Nominal voltage (V)	12	24
No load speed (rpm)	7000	7000
No load current (mA)	≤ 900	≤ 500
Nominal speed (rpm)	5700	5900
Nominal torque (mNm)	69	56
Nominal current (mA)	≤ 5500	≤ 2100
Stall torque (mNm)	406	422
Starting current (A)	26	13
Output (W)	41	35
Length (mm)	66	66
Weight (g)	360	360

GEAR HEAD DATA

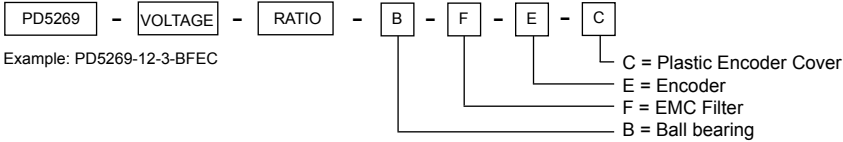
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Max. continuous torque (mNm)	294	785	785	785	1765	1765	1765	1961	1961	2452	2452	2942	2942	2942	2942	2942	2942	2942	2942	2942
Intermittently permissible torque (mNm)	883	2354	2354	2354	5296	5296	5296	5884	5884	7355	7355	8826	8826	8826	8826	8826	8826	8826	8826	8826
Efficiency %	80	70	70	70	60	60	60	60	60	50	50	50	50	50	50	40	40	40	40	40
Length L (mm)	32.5	39.2	39.2	39.2	45.9	45.9	45.9	45.9	45.9	52.6	52.6	52.6	52.6	52.6	52.6	59.3	59.3	59.3	59.3	59.3
Weight (g)	139	191	191	191	231	231	231	231	231	281	281	281	281	281	281	326	326	326	326	326

PD5269 Ø52 mm carbon brushes 48 W



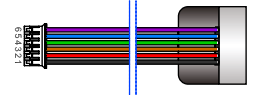
Unit: mm

MODEL NO. DESIGNATIONS



Example: PD5269-12-3-BFEC

ENCODER
Page 21



GEAR MOTOR DATA

	3:1	4:1	12:1	15:1	19:1	43:1	53:1	66:1	81:1	100:1	113:1	150:1	230:1	285:1	353:1	488:1	546:1	676:1
Reduction	3:1	4:1	12:1	15:1	19:1	43:1	53:1	66:1	81:1	100:1	113:1	150:1	230:1	285:1	353:1	488:1	546:1	676:1
Nominal torque 12 V (mNm)	130	160	400	490	620	1180	1480	1860	2260	2750	3140	3530	5390	6670	8240	9810	9810	9810
Nominal speed 12 V (rpm)	1560	1260	450	369	305	130	105	85	68.5	55.5	49.5	37	24	19.5	15.5	11.5	10.4	8.3
Nominal torque 24 V (mNm)	180	220	540	670	830	1570	1960	2450	3040	3830	4320	4710	7260	9020	9810	9810	9810	9810
Nominal speed 24 V (rpm)	1520	1230	444	359	290	127	102	83	66.5	54	48	36	23.5	19	15.5	11.6	10.5	8.4
Length (mm)	122	122	137.5	137.5	137.5	153	153	153	153	153	153	168.5	168.5	168.5	168.5	168.5	168.5	168.5
Weight (g)	875	875	1060	1060	1060	1250	1250	1250	1250	1250	1250	1420	1420	1420	1420	1420	1420	1420

GEAR MOTOR FEATURES AND STANDARD DATA

	STANDARD	CUSTOMIZATION OPTIONS
Type	Planetary brush dc gear motor	
Motor type	Iron core, brush commutation	Winding parameters
Motor brush type	Carbon brushes	
Motor terminals	Soldering ears	Wiring harnesses, cables and connectors
EMC filter	Yes	
Gears	Plastic/Powder metal	Plastic
Motor pinion gear	Metal	Metal
Bearing	Ball bearing	
Shaft	Hardened stainless steel	Dimensions
Encoder option	Magetic encoder (to order as option)	Through shaft dimensions and screw holes
Operating temperature	-10...+60 °C	- 40...+60 °C
Backlash no load	≤ 3°	
Radial load 10 mm from gear flange	≤ 196 N	
Shaft axial load	≤ 98.1 N	
Shaft press fit force	≤ 294 N	
Radial play	≤ 0.04 mm	
Thrust play	≤ 0.3 mm	
Manufacturing quality standards	ISO 9001	
RoHS compliance	Yes	
CE label	No	Yes
UL approval	No	Yes

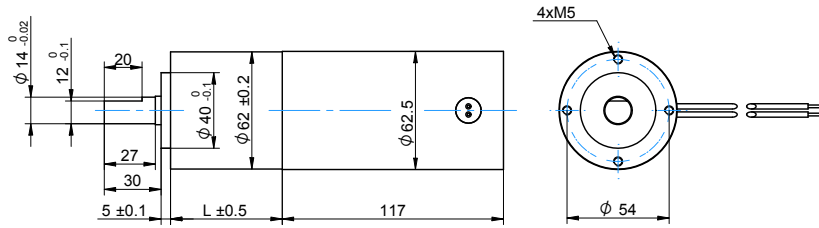
MOTOR DATA

	12	24
Nominal voltage (V)	12	24
No load speed (rpm)	6000	6000
No load current (mA)	≤ 1750	≤ 750
Nominal speed (rpm)	5600	5450
Nominal torque (mNm)	47.1	63.7
Nominal current (mA)	≤ 5600	≤ 2750
Stall torque (mNm)	531	600
Starting current (A)	28.6	16.9
Output (W)	58.6	48.3
Length (mm)	69	69
Weight (g)	480	480

GEAR HEAD DATA

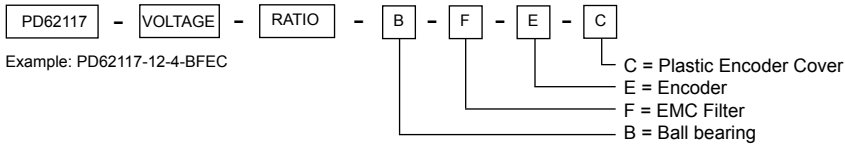
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Reduction	3:1	4:1	12:1	15:1	19:1	43:1	53:1	66:1	81:1	100:1	113:1	150:1	230:1	285:1	353:1	488:1	546:1	676:1
Max. continuous torque (Nm)	0.98	0.98	2.9	2.9	4.9	9.8	9.8	9.8	9.8	9.8	9.8	9.8	9.8	9.8	9.8	9.8	9.8	9.8
Intermittently permissible torque (Nm)	2.9	2.9	8.8	8.8	14.7	29.4	29.4	29.4	29.4	29.4	29.4	29.4	29.4	29.4	29.4	29.4	29.4	29.4
Efficiency %	80	80	70	70	60	60	60	60	60	60	60	60	50	50	50	50	50	50
Length L (mm)	53	53	68.5	68.5	84	84	84	84	84	84	84	84	99.5	99.5	99.5	99.5	99.5	99.5
Weight (g)	475	475	660	660	660	850	850	850	850	850	850	1020	1020	1020	1020	1020	1020	1020

PD62117 Ø62 mm carbon brushes 16 W



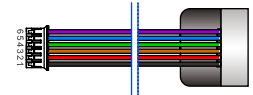
Unit: mm

MODEL NO. DESIGNATIONS



ENCODER

Page 21



GEAR MOTOR DATA

	3:1	4:1	12:1	15:1	19:1	43:1	53:1	66:1	81:1	100:1	113:1	150:1	230:1	285:1	353:1	488:1	546:1	676:1
Reduction	3:1	4:1	12:1	15:1	19:1	43:1	53:1	66:1	81:1	100:1	113:1	150:1	230:1	285:1	353:1	488:1	546:1	676:1
Nominal torque 12 V (mNm)	250	290	740	920	1160	2260	2750	3430	4220	5300	5980	6570	9810	9810	9810	9810	9810	9810
Nominal speed 12 V (rpm)	480	390	135	110	90	39.5	32	25.7	21	17	15	11	7.3	6	5	3.7	3.3	2.7
Nominal torque 24 V (mNm)	410	500	1230	1540	1930	3730	4610	5790	7060	8830	9810	9810	9810	9810	9810	9810	9810	9810
Nominal speed 24 V (rpm)	500	400	140	15	93	40.5	33	26.5	21.5	17.5	15.4	11.7	7.8	6.3	5.3	3.8	3.4	2.8
Length (mm)	160.6	160.6	176.1	176.1	191.6	191.6	191.6	191.6	191.6	191.6	207.1	207.1	207.1	207.1	207.1	207.1	207.1	207.1
Weight (kg)	1.65	1.65	1.92	1.92	1.92	2.2	2.2	2.2	2.2	2.2	2.2	2.48	2.48	2.48	2.48	2.48	2.48	2.48

GEAR MOTOR FEATURES AND STANDARD DATA

	STANDARD	CUSTOMIZATION OPTIONS
Type	Planetary brush dc gear motor	
Motor type	Iron core, brush commutation	Winding parameters
Motor brush type	Carbon brushes	
Motor terminals	Soldering ears	Wiring harnesses, cables and connectors
EMC filter	Yes	
Gears	Plastic/Powder metal	Plastic
Motor pinion gear	Metal	Metal
Bearing	Ball bearing	
Shaft	Hardened stainless steel	Dimensions
Encoder option	Magnetic encoder (to order as option)	Through shaft dimensions and screw holes
Operating temperature	-10...+60 °C	-40...+60 °C
Backlash no load	≤ 3°	
Radial load 10 mm from gear flange	≤ 245 N	
Shaft axial load	≤ 98.1 N	
Shaft press fit force	≤ 490 N	
Radial play	≤ 0.08 mm	
Thrust play	≤ 0.4 mm	
Manufacturing quality standards	ISO 9001	
RoHS compliance	Yes	
CE label	No	Yes
UL approval	No	Yes

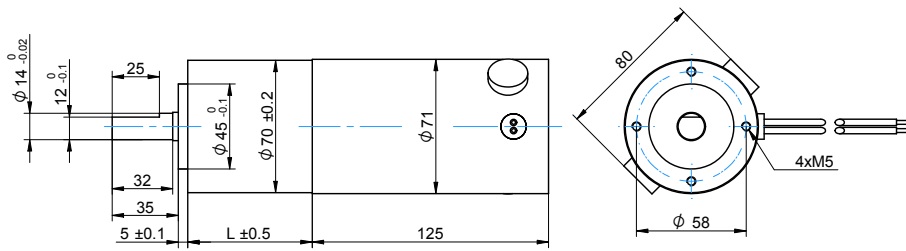
MOTOR DATA

	12	24
Nominal voltage (V)	12	24
No load speed (rpm)	2000	2000
No load current (mA)	≤ 1800	≤ 1500
Nominal speed (rpm)	1700	1750
Nominal torque (mNm)	88.3	147
Nominal current (mA)	≤ 1800	≤ 1500
Output (W)	15.7	26.9
Length (mm)	117	117
Weight (g)	1650	1650

GEAR HEAD DATA

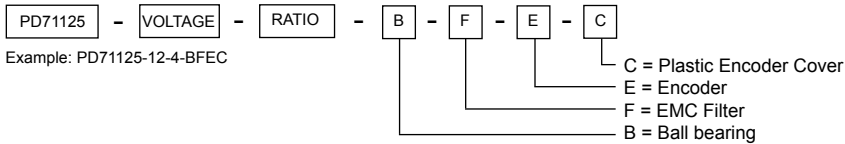
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Reduction	3:1	4:1	12:1	15:1	19:1	43:1	53:1	66:1	81:1	100:1	113:1	150:1	230:1	285:1	353:1	488:1	546:1	676:1
Max. continuous torque (Nm)	1.47	1.47	4.91	4.91	4.91	9.81	9.81	9.81	9.81	9.81	9.81	9.81	9.81	9.81	9.81	9.81	9.81	9.81
Intermittently permissible torque (mNm)	4.41	4.41	14.7	14.7	14.7	14.7	14.7	14.7	14.7	14.7	14.7	14.7	14.7	14.7	14.7	14.7	14.7	14.7
Efficiency %	80	80	70	70	70	60	60	60	60	60	60	50	50	50	50	50	50	50
Length L (mm)	43.6	43.6	59.1	59.1	59.1	74.6	74.6	74.6	74.6	74.6	74.6	90.1	90.1	90.1	90.1	90.1	90.1	90.1
Weight (g)	670	670	940	940	1220	1220	1220	1220	1220	1220	1220	1500	1500	1500	1500	1500	1500	1500

PD71125 Ø71 mm carbon brushes 28 W



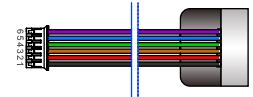
Unit: mm

MODEL NO. DESIGNATIONS



ENCODER

Page 21



GEAR MOTOR DATA

	4:1	13:1	16:1	20:1	50:1	60:1	75:1	91:1	102:1	126:1	189:1	242:1	300:1	363:1	414:1	493:1	543:1	611:1
Reduction	4:1	13:1	16:1	20:1	50:1	60:1	75:1	91:1	102:1	126:1	189:1	242:1	300:1	363:1	414:1	493:1	543:1	611:1
Nominal torque 12 V (Nm)	0.41	1.35	1.65	2.00	4.40	5.30	6.57	7.95	8.93	11.1	12.3	12.3	12.3	12.3	12.3	12.3	12.3	12.3
Nominal speed 12 V (rpm)	510	135	112	90.9	36	29.7	24	19.7	17.6	14.2	9.5	7.5	6.2	5.1	4.4	3.7	3.4	3
Nominal torque 24 V (Nm)	0.69	2.27	2.75	3.39	7.35	8.89	11.0	12.3	12.3	12.3	12.3	12.3	12.3	12.3	12.3	12.3	12.3	12.3
Nominal speed 24 V (rpm)	510	135	112	90.9	36	29.7	24	19.8	17.7	14.3	9.6	7.6	6.3	5.2	4.5	3.8	3.5	3.1
Length (mm)	174.6	190.8	190.8	190.8	207.3	207.3	207.3	207.3	207.3	207.3	223.8	223.8	223.8	223.8	223.8	223.8	223.8	223.8
Weight (kg)	2.44	2.77	2.77	2.77	3.1	3.1	3.1	3.1	3.1	3.1	3.44	3.44	3.44	3.44	3.44	3.44	3.44	3.44

GEAR MOTOR FEATURES AND STANDARD DATA

	STANDARD	CUSTOMIZATION OPTIONS
Type	Planetary brush dc gear motor	
Motor type	Iron core, brush commutation	Winding parameters
Motor brush type	Carbon brushes	
Motor terminals	Soldering ears	Wiring harnesses, cables and connectors
EMC filter	Yes	
Gears	Plastic/Powder metal	Plastic
Motor pinion gear	Metal	Metal
Bearing	Ball bearing	
Shaft	Hardened stainless steel	Dimensions
Encoder option	Magnetic encoder (to order as option)	Through shaft dimensions and screw holes
Operating temperature	-10...+60 °C	- 40...+60 °C
Backlash no load	≤ 3°	
Radial load 10 mm from gear flange	≤ 245 N	
Shaft axial load	≤ 98.1 N	
Shaft press fit force	≤ 490 N	
Radial play	≤ 0.08 mm	
Thrust play	≤ 0.4 mm	
Manufacturing quality standards	ISO 9001	
RoHS compliance	Yes	
CE label	No	Yes
UL approval	No	Yes

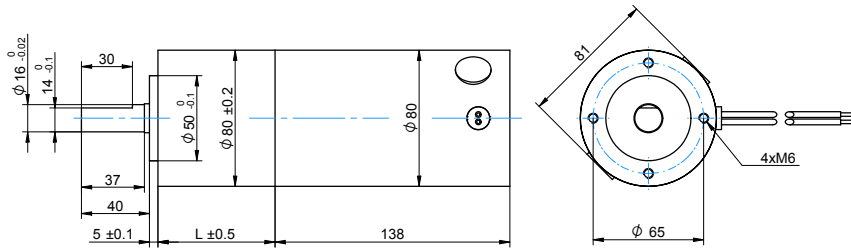
MOTOR DATA

	12	24
Nominal voltage (V)	12	24
No load speed (rpm)	2000	2000
No load current (mA)	≤ 800	≤ 400
Nominal speed (rpm)	1800	1800
Nominal torque (mNm)	147	245
Nominal current (mA)	≤ 3000	≤ 2500
Output (W)	27.7	46.2
Length (mm)	125	125
Weight (g)	1650	1650

GEAR HEAD DATA

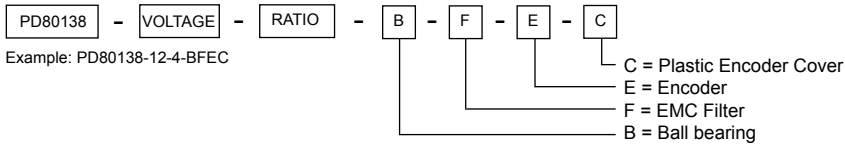
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Reduction	4:1	13:1	16:1	20:1	50:1	60:1	75:1	91:1	102:1	126:1	189:1	242:1	300:1	363:1	414:1	493:1	543:1	611:1
Max. continuous torque (Nm)	1.47	6.87	6.87	6.87	12.3	12.3	12.3	12.3	12.3	12.3	12.3	12.3	12.3	12.3	12.3	12.3	12.3	12.3
Intermittently permissible torque (Nm)	4.41	20.6	20.6	20.6	36.8	36.8	36.8	36.8	36.8	36.8	36.8	36.8	36.8	36.8	36.8	36.8	36.8	36.8
Efficiency %	80	70	70	70	60	60	60	60	60	60	50	50	50	50	50	50	50	50
Length L (mm)	49.3	65.8	65.8	65.8	82.3	82.3	82.3	82.3	82.3	82.3	82.3	98.9	98.9	98.9	98.9	98.9	98.9	98.9
Weight (kg)	0.90	1.23	1.23	1.23	1.56	1.56	1.56	1.56	1.56	1.56	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9

PD80138 Ø80 mm carbon brushes 44 W



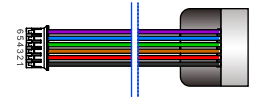
Unit: mm

MODEL NO. DESIGNATIONS



ENCODER

Page 21



GEAR MOTOR DATA

	4:1	13:1	15:1	19:1	21:1	49:1	55:1	71:1	80:1	103:1	117:1	186:1	210:1	306:1	393:1	445:1	571:1	647:1
Reduction	4:1	13:1	15:1	19:1	21:1	49:1	55:1	71:1	80:1	103:1	117:1	186:1	210:1	306:1	393:1	445:1	571:1	647:1
Nominal torque 12 V (Nm)	0.75	2.2	2.5	3.1	3.5	7.2	8.0	10.3	11.8	12.3	12.3	12.3	12.3	12.3	12.3	12.3	12.3	12.3
Nominal speed 12 V (rpm)	445	130	115	90	80	34	30	23.5	21	16.7	14.7	9.3	8.3	5.8	4.5	4	3.2	2.8
Nominal torque 24 V (Nm)	0.95	2.8	3.1	4.0	4.6	9.1	9.7	12.3	12.3	12.3	12.3	12.3	12.3	12.3	12.3	12.3	12.3	12.3
Nominal speed 24 V (rpm)	470	140	124	95	85	36	32	25.5	23	17.8	15.6	9.9	8.8	6	4.7	4.2	3.3	2.9
Length (mm)	190.3	206.8	206.8	206.8	206.8	223.3	223.3	223.3	223.3	223.3	223.3	239.8	239.8	239.8	239.8	239.8	239.8	239.8
Weight (kg)	3.05	3.5	3.5	3.5	3.5	3.95	3.95	3.95	3.95	3.95	3.95	4.4	4.4	4.4	4.4	4.4	4.4	4.4

GEAR MOTOR FEATURES AND STANDARD DATA

	STANDARD	CUSTOMIZATION OPTIONS
Type	Planetary brush dc gear motor	
Motor type	Iron core, brush commutation	Winding parameters
Motor brush type	Carbon brushes	
Motor terminals	Soldering ears	Wiring harnesses, cables and connectors
EMC filter	Yes	
Gears	Plastic/Powder metal	Plastic
Motor pinion gear	Metal	Metal
Bearing	Ball bearing	
Shaft	Hardened stainless steel	Dimensions
Encoder option	Magnetic encoder (to order as option)	Through shaft dimensions and screw holes
Operating temperature	-10...+60 °C	- 40...+60 °C
Backlash no load	≤ 3°	
Radial load 10 mm from gear flange	≤ 294 N	
Shaft axial load	≤ 98.1 N	
Shaft press fit force	≤ 736 N	
Radial play	≤ 0.08 mm	
Thrust play	≤ 0.4 mm	
Manufacturing quality standards	ISO 9001	
RoHS compliance	Yes	
CE label	No	Yes
UL approval	No	Yes

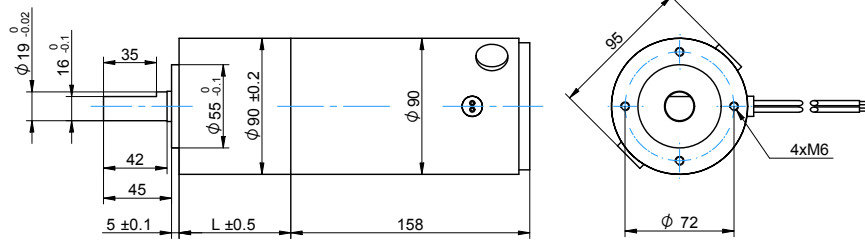
MOTOR DATA

	12	24
Nominal voltage (V)	12	24
No load speed (rpm)	2000	2000
No load current (mA)	≤ 1100	≤ 600
Nominal speed (rpm)	1700	1800
Nominal torque (mNm)	245	314
Nominal current (mA)	≤ 5300	≤ 3400
Output (W)	43.6	59
Length (mm)	138	138
Weight (g)	1650	1650

GEAR HEAD DATA

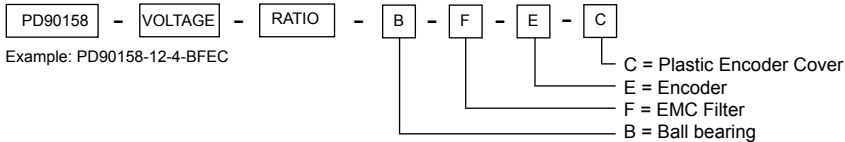
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Reduction	4:1	13:1	15:1	19:1	21:1	49:1	55:1	71:1	80:1	103:1	117:1	186:1	210:1	306:1	393:1	445:1	571:1	647:1
Max. continuous torque (mNm)	1.5	6.9	6.9	6.9	6.9	12.3	12.3	12.3	12.3	12.3	12.3	12.3	12.3	12.3	12.3	12.3	12.3	12.3
Intermittently permissible torque (mNm)	4.4	20.6	20.6	20.6	20.6	36.8	36.8	36.8	36.8	36.8	36.8	36.8	36.8	36.8	36.8	36.8	36.8	36.8
Efficiency %	80	70	70	70	70	60	60	60	60	60	60	50	50	50	50	50	50	50
Length L (mm)	52.3	68.8	68.8	68.8	68.8	85.3	85.3	85.3	85.3	85.3	85.3	101.8	101.8	101.8	101.8	101.8	101.8	101.8
Weight (g)	1.20	1.65	1.65	1.65	1.65	2.1	2.1	2.1	2.1	2.1	2.1	2.6	2.6	2.6	2.6	2.6	2.6	2.6

PD90158 Ø80 mm carbon brushes 68 W



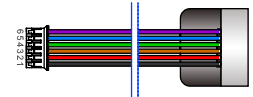
Unit: mm

MODEL NO. DESIGNATIONS



ENCODER

Page 21



GEAR MOTOR DATA

	4:1	15:1	19:1	52:1	60:1	77:1	98:1	201:1	294:1	403:1	517:1
Reduction	4:1	15:1	19:1	52:1	60:1	77:1	98:1	201:1	294:1	403:1	517:1
Nominal torque 12 V (Nm)	0.98	3.6	4.7	11.3	13.0	14.7	14.7	14.7	14.7	14.7	14.7
Nominal speed 12 V (rpm)	500	123	96	34	31	24	19	9.2	6.4	4.6	3.6
Nominal torque 24 V (Nm)	1.2	4.1	5.4	12.8	14.7	14.7	14.7	14.7	14.7	14.7	14.7
Nominal speed 24 V (rpm)	510	127	99	35	31	25	20	9.4	6.5	4.7	3.7
Length (mm)	215.3	231.8	231.8	248.3	248.3	248.3	248.3	264.8	264.8	264.8	264.8
Weight (g)	4.52	5.08	5.08	5.65	5.65	5.65	5.65	6.22	6.22	6.22	6.22

GEAR MOTOR FEATURES AND STANDARD DATA

	STANDARD	CUSTOMIZATION OPTIONS
Type	Planetary brush dc gear motor	
Motor type	Iron core, brush commutation	Winding parameters
Motor brush type	Carbon brushes	
Motor terminals	Soldering ears	Wiring harnesses, cables and connectors
EMC filter	Yes	
Gears	Plastic/Powder metal	Plastic
Motor pinion gear	Metal	Metal
Bearing	Ball bearing	
Shaft	Hardened stainless steel	Dimensions
Encoder option	Magetic encoder (to order as option)	Through shaft dimensions and screw holes
Operating temperature	-10...+60 °C	- 40...+60 °C
Backlash no load	≤ 4°	
Radial load 10 mm from gear flange	≤ 392 N	
Shaft axial load	≤ 98.1 N	
Shaft press fit force	≤ 981 N	
Radial play	≤ 0.08 mm	
Thrust play	≤ 0.4 mm	
Manufacturing quality standards	ISO 9001	
RoHS compliance	Yes	
CE label	No	Yes
UL approval	No	Yes

MOTOR DATA

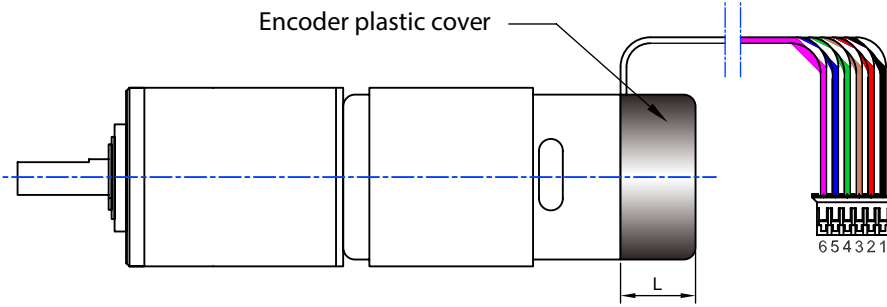
	12	24
Nominal voltage (V)	12	24
No load speed (rpm)	2000	2000
No load current (mA)	≤ 1500	≤ 950
Nominal speed (rpm)	1800	1860
Nominal torque (mNm)	363	412
Nominal current (mA)	≤ 8300	≤ 3900
Output (W)	68.4	80
Length (mm)	158	158
Weight (g)	2150	2150

GEAR HEAD DATA

	4:1	15:1	19:1	52:1	60:1	77:1	98:1	201:1	294:1	403:1	517:1
Reduction	4:1	15:1	19:1	52:1	60:1	77:1	98:1	201:1	294:1	403:1	517:1
Max. continous torque (Nm)	1.96	7.90	7.90	14.7	14.7	14.7	14.7	17.7	17.7	17.7	17.7
Intermittently permissible torque (Nm)	5.90	23.5	23.5	44.2	44.2	44.2	44.2	53.0	53.0	53.0	53.0
Efficiency %	80	70	70	60	60	60	60	50	50	50	50
Length L (mm)	57.3	73.8	73.8	90.3	90.3	90.3	90.3	106.8	106.8	106.8	106.8
Weight (g)	1670	2230	2230	2800	2800	2800	2800	3370	3370	3370	3370

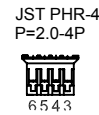
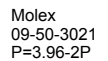
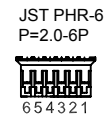
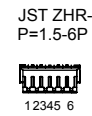
Encoder 6/14/38 counts per revolution 2 channels

PDxxx-12-4-BFEC



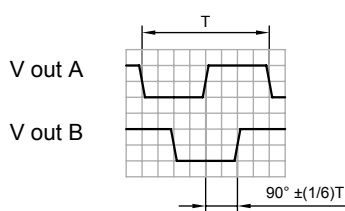
ENCODER FEATURES		
	STANDARD	CUSTOMIZATION OPTIONS
Type	Magnetic	Yes
Counts per revolution		Yes
Number of channels	2	1
Harness		Yes
Connector		Yes
Encoder rear cover	Black plastic	Yes
Operating temperature range	-10 to +60°C	
Manufacturing quality standard	ISO9001	
RoHS compliance	Yes	
CE label	No	Yes
UL approval	No	Yes
Open collector output (VoutA, VoutB)		

MOTOR AND ENCODER CONNECTION	
Motor -	1. Black
Motor +	2. Red
Vcc. Hall sensor	3. Brown
GND. Hall sensor	4. Green
V out A. Hall sensor	5. Blue
V out B. Hall sensor	6. Purple

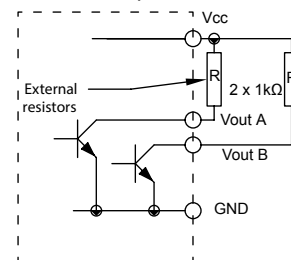


ENCODER DATA						
Gear motor model	PD1230, PD1330, PD1626	PD2232	PD2846, PD3046, PD3237, PD3246	PD3557, PD3665, PD3865, PDS4265	PD4266	PD5269, PD62117, PD71125, PD80138, PD90158
Hall sensor	UTC SK1816	UTC SK1816	UTC SK1816	UTC SK1816	UTC SK1816	UTC SK1816
Number of encoder channels	2	2	2	2	2	2
Counts per revolution per channel (CPR)	6	6	14	14	38	38
Encoder cable length (mm)	100	100	100	100	100	100
Wire gauge (AWG)	AWG26/UL1061	AWG24/UL1007	AWG24/UL1007	AWG24/UL1007	AWG24/UL1007	AWG24/UL1007
Cable conector	JST ZHR-6 P=1.5-6P	JST PHR-6 P=2.0-6P	JST PHR-6 P=2.0-6P	JST PHR-6 P=2.0-6P	JST PHR-4 P=2.0-4P Molex 09-50-3021 P=3.96-2p	JST PHR-4 P=2.0-4P Molex 09-50-3021 P=3.96-2p
Encoder plastic rear cover length L (mm)	No cover	No cover	12.6	13.5	15.5	18

Encoder output way form



Encoder output circuit



ENCODER TEST DATA						
CHARACTERISTIC	SYMBOLS	TEST CONDITIONS	MIN	REF	MAX	UNITS
Supply voltage	Vcc	---	3.5	-	20	V
Output saturation voltage	Vce (sat)	Vcc = 14V ; Ic = 20m	-	300	700	mV
Output leakage current	Icex	Vce = 14V ; Vcc = 14	-	< 0.1	10	μA
Supply Current	Ice	Vcc = 20V Output open	-	5	10	mA
Output rise time	tr	Vcc = 14V; R = 820 Ohm; CL = 20pF	-	0.3	1.5	μS
Output fall time	tf	Vcc = 14V; R = 820 Ohm; CL = 20pF	-	0.3	1.5	μS
Phase shift	φ	---	90 ±(1/6)T			°