

CARACTERÍSTICAS DEL MOTOR DC DE MINIMOTOR.

- MOTOR DC, 2842-012C
- REDUCTOR, 38/3 18,2:1
- ENCODER, HEDS 5540 A

DC-Micromotors

Gearheads Encoders

DC-Motor-Tacho Combinations

Type 2842 ... C

Graphite Commutation

Type 23/1, 30/1, 38/1, 38/2, 38/3

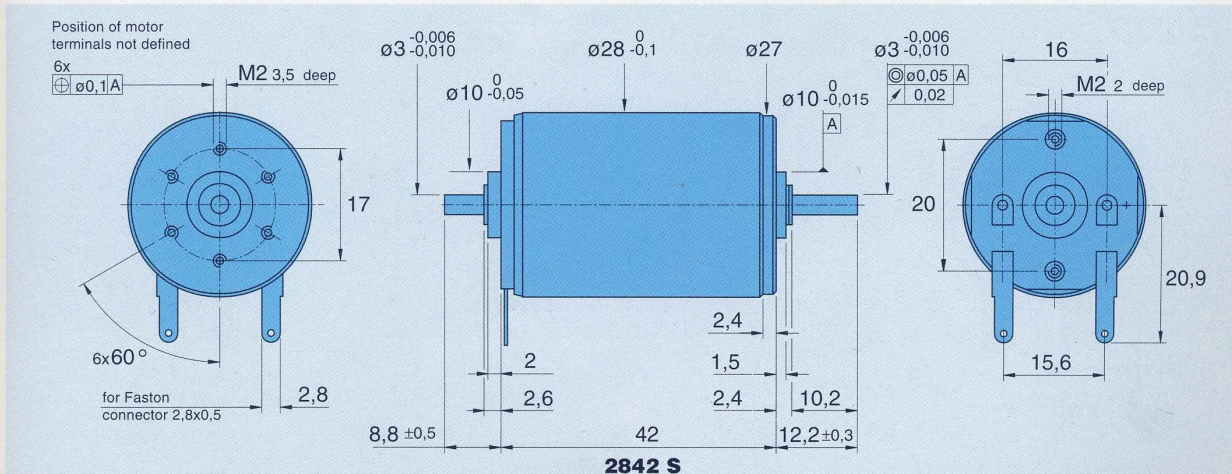
Type 20/21B, 03A, 03B, 10/09B, 10/09BP, HEDS

Type 2842

Motor type	2842 S	006 C	012 C	024 C	028 C	036 C	
1.Nominal voltage	U _N	6	12	24	28	36	Volt
2.Terminal resistance	R	1,6	5,3	21,0	28,5	46,0	Ω
3.Output power	P _{2 max.}	5,33	6,50	6,56	6,57	6,74	W
4.Efficiency	η _{max.}	72	74	74	74	74	%
5.No-load speed	n _o	5 100	5 100	5 000	5 100	5 200	rpm
6.No-load current (with shaft ø 3,0 mm)	I _o	0,100	0,050	0,025	0,022	0,017	A
7.Starting voltage, typical	U _a	200	300	500	600	800	mV
8.Stall torque	M _H	39,9	48,6	50,1	49,3	49,5	mNm
9.Friction torque	M _R	1,10	1,10	1,10	1,10	1,10	mNm
10.Speed constant	k _n	873	435	213	186	148	rpm/V
11.Back-EMF constant	k _E	1,150	2,300	4,700	5,370	6,770	mV/rpm
12.Torque constant	k _M	10,90	22,00	44,80	51,30	64,70	mNm/A
13.Current constant	k _I	0,091	0,046	0,022	0,020	0,015	A/mNm
14.Slope of n-M curve	Δn/ΔM	128	105	100	103	105	rpm/mNm
15.Rotor inductance	L	145	580	2 500	3 200	5 000	μH
16.Mechanical time constant	τ _m	13	15	15	15	15	ms
17.Rotor inertia	J	9,7	14,0	14,0	14,0	14,0	gcm ²
18.Angular acceleration	α _{max.}	41	36	35	36	36	·10 ³ rad/s ²
19.Thermal resistance	R _{th 1} / R _{th 2}	2 / 16					K/W
20.Thermal time constant	τ _{w1} / τ _{w2}	8 / 831					s
21.Operating temperature range							
– motor		– 30 ... + 125					°C
– rotor, max. permissible		+ 125					°C
22.Commutation		copper - graphite					
23.Shaft bearings		ball bearings, preloaded					
24.Shaft load max.							
– shaft diameter		3,0					mm
– radial at 3000 rpm (3 mm from bearing)		20					N
– axial at 3000 rpm		2					N
– axial at standstill		20					N
25.Shaft play							
– radial	≤	0,015					mm
– axial		0					mm
26.Magnet material		AlNiCo					
27.Housing material		steel, galvanic zinc plated and passivated					
28.Weight		132					g
29.Direction of rotation		viewed from the front face, positive voltage on + terminal gives clockwise rotation					

Recommended values for continuous operation

30.Speed	up to	n_e max.	5 000	5 000	5 000	5 000	5 000	rpm
31.Torque	up to	M_e max.	20	20	20	20	20	mNm
32.Current	up to (thermal limits)	I_e max.	1,600	0,880	0,440	0,380	0,300	A





Spur Gearheads

DC-Micromotors

Brushless DC-Servomotors DC-Motor-Tacho Combinations

Type 38/3

Sleeve bearings

Type 2224, 2230, 2233
2338, 2342, 2842

Type 2444

Type 2251, 2356, 2342, 2842

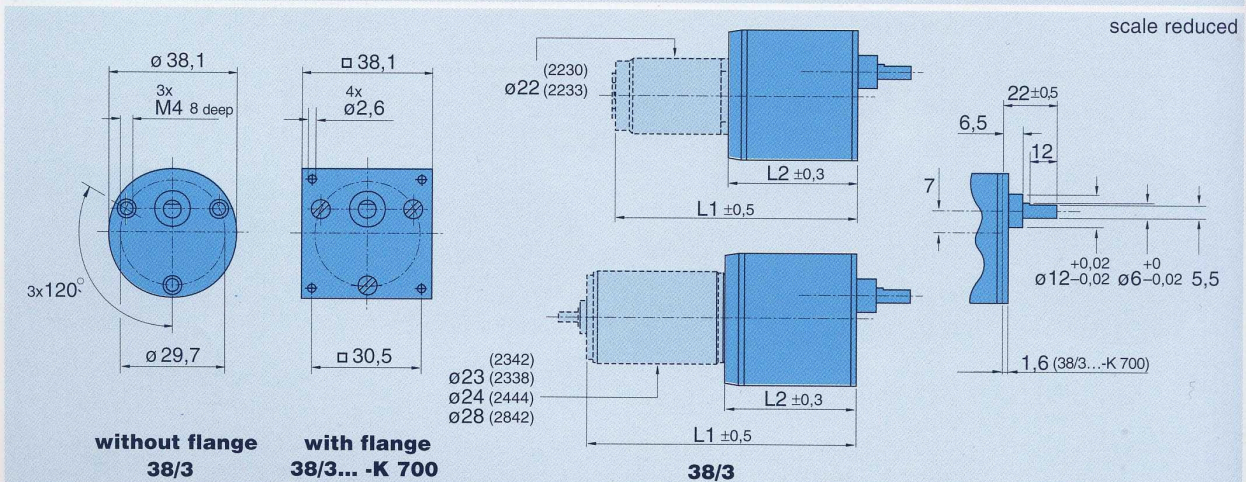
Gearhead type	38/3
Housing material/mounting face	plastic/steel
Geartrain material	steel ¹⁾
Recommended max. input speed for continuous operation	5000 rpm
Backlash, typical, at no-load	≤ 2°
Bearings on output shaft	sintered sleeve bearings
Shaft load, max.	
– radial (15 mm from mounting face)	≤ 50 N
– axial	≤ 30 N
Shaft push on pressure, max. (with rear plate supported)	≤ 500 N
Shaft play	
– radial (on bearing output)	≤ 0,2 mm
– axial	≤ 0,5 mm
Operating temperature range	– 15° ... + 65° C

Specifications

reduction ratio (nominal)	weight without motor g	length without motor		length with motor					output torque		direction of rotation (reversible)	efficiency
		2230 U 2233 U	2338 S 2444 S 2842 S	2230 U	2233 U	2338 S	2444 S	2342 S 2842 S	continuous operation	intermittent operation		
		L2 mm	L2 mm	L1 mm	L1 mm	L1 mm	L1 mm	L1 mm	M max. mNm	M max. mNm		
5,42:1	66	19,3	23,8	49,3	52,1	61,4	67,8	65,8	75	2 000	=	81
10,3 :1	71	19,3	23,8	49,3	52,1	61,4	67,8	65,8	150	2 000	≠	73
18,2 :1	71	19,3	23,8	49,3	52,1	61,4	67,8	65,8	225	2 000	≠	73
34,7 :1	79	25,3	29,8	55,3	58,1	67,4	73,8	71,8	325	2 000	=	66
61,1 :1	79	25,3	29,8	55,3	58,1	67,4	73,8	71,8	450	2 000	=	66
116 :1	85	25,3	29,8	55,3	58,1	67,4	73,8	71,8	600	2 000	≠	59
205 :1	85	25,3	29,8	55,3	58,1	67,4	73,8	71,8	800	2 000	≠	59
391 :1	92	28,4	32,9	58,4	61,2	70,5	76,9	74,9	1 000	2 000	=	53
689 :1	92	28,4	32,9	58,4	61,2	70,5	76,9	74,9	1 200	2 000	=	53
586 ²⁾ :1	94		32,9			70,5	76,9	74,9	1 000	2 000	≠	48
1 034 ²⁾ :1	94		32,9			70,5	76,9	74,9	1 200	2 000	≠	48

¹⁾ Gearheads with ratios ≥ 34,7:1 have a plastic input gearwheel.
Gearheads with ratios ≤ 18,2:1 have a steel input gearwheel.

²⁾ These ratios are available only with motor types 2338, 2444 and 2842.
Type 38/3...-K 700 with square flange has an additional weight of 17 g.



Encoders

Optical encoder

Type 5500, 5540

96 to 1024 Lines per revolution
2 or 3 Channels
Digital output

Encoder type		HEDS 5500	HEDS 5540	HEDM 5500	
Lines per revolution	N	96 - 512	100 - 512	1000 - 1024	
Signal output, square wave		2	2 + 1 index	2	channels
Supply voltage	V _{cc}	4,5 ... 5,5	4,5 ... 5,5	4,5 ... 5,5	V _{DC}
Current consumption, typical (V _{cc} = 5 V DC)	I _{cc}	17	57	57	mA
Pulse width	P	180 ± 45	180 ± 45	180 ± 45	°e
Phase shift, channel A to B	Φ	90 ± 20	90 ± 20	90 ± 20	°e
Logic state width	S	90 ± 45	90 ± 45	90 ± 45	°e
Cycle	C	360 ± 5,5	360 ± 5,5	360 ± 5,5	°e
Signal rise/fall time, typical	tr / tf	0,25 / 0,25	0,25 / 0,25	0,25 / 0,25	µs
Frequency range ¹⁾	f	up to 100	up to 100 ²⁾	up to 100	kHz
Inertia of code disc	J	0,6	0,6	0,6	gcm ²
Operating temperature range		-40 ... +100	-40 ... +100	-40 ... +70	°C

¹⁾ Velocity (rpm) = f (Hz) x 60/N

²⁾ HEDS 5540 requires pull-up resistors of 2,7 kΩ between pins 2, 3, 5 and 4 (V_{cc})

Ordering information

Encoder type	number of channels	lines per revolution	in combination with DC-Micromotors and DC-Motor-Tacho units
	5500	5540	
HEDS 5500 K	2	—	96
HEDS 5500 C	2	2 + 1	100
HEDS 5500 D	2	—	192
HEDS 5500 E	2	2 + 1	200
HEDS 5500 F	2	2 + 1	256
HEDS 5500 G	2	2 + 1	360
HEDS 5500 H	2	2 + 1	400
HEDS 5500 A	2	2 + 1	500
HEDS 5500 I	2	2 + 1	512
HEDM 5500 B	2	—	1000
HEDM 5500 J	2	—	1024

type
2036, 2444, 3056, 3564
2230, 2233, 2251
2338, 2342, 2356
2842, 3042
3557, 3863

Interlocking connectors options: with extension cables 300 mm length;
- Part no. 5500.J01.1030 = 4 PTFE cables for HEDS 5500 and HEDM 5500
- Part no. 5500.J01.1031 = 5 PTFE cables for HEDS 5540

Line driver options: available for enhanced performance when used in noisy environments or required to drive long distances.

Features

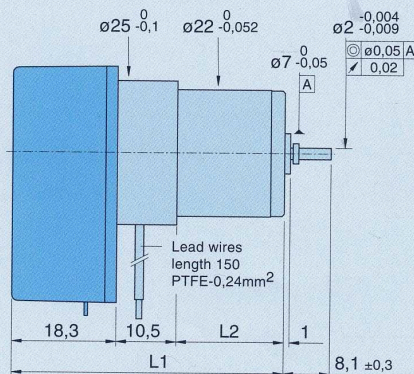
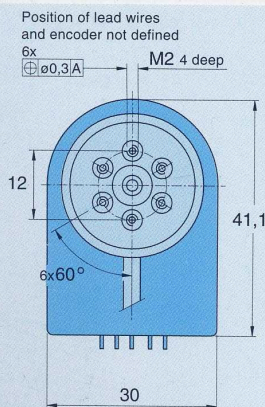
These incremental shaft encoders in combination with the DC-Micromotors (System Faulhaber®) are designed for indication and control of both, shaft velocity and direction of rotation as well as for positioning.

A LED source and lens system transmits collimated light through a low inertia metal disc to give two channels with 90° phase shift.

The single 5 volt supply and the two or three channel digital output signals are interfaced with a 5-pin connector.

Ball bearings are recommended for continuous operation at low and high speeds and for elevated radial shaft load.

Details for the DC-Micromotors and suitable reduction gearheads are on separate catalogue pages.



scale reduced

Encoders HEDS 5500, 5540
with DC-Micromotors 2230, 2233

Motor type	L1	L2
2230	52,8	24
2233	55,6	26,8

