DC-Micromotors
Graphite Commutation

131 mNm
110 W

Series 3863 ... CR

Values at 22°C and nominal voltage		3863 H	012 CR	018 CR	024 CR	036 CR	048 CR	
1	Nominal voltage	U_N	12	18	24	36	48	V
2	Terminal resistance	R	0,16	0,36	0,64	1,55	2,58	Ω
3	Output power	$P_{2nom.}$	205	211	214	201	217	W
4	Efficiency, max.	$\eta_{max.}$	83	84	85	86	86	%
5	No-load speed	n_0	5 600	5 900	5 800	5 800	5 800	min^{-1}
6	No-load current, typ. (with shaft ø 6 mm)	I_0	0,335	0,232	0,168	0,112	0,084	A
7	Stall torque	M_H	1 424	1 394	1 455	1 363	1 461	mNm
8	Friction torque	M_R	6,5	6,5	6,5	6,5	6,5	mNm
9	Speed constant	k_n	480	332	240	160	120	min^{-1}/V
10	Back-EMF constant	k_E	2,08	3,01	4,17	6,25	8,33	mV/min^{-1}
11	Torque constant	k_M	19,9	28,8	39,8	59,8	79,7	mNm/A
12	Current constant	k_I	0,05	0,035	0,025	0,017	0,013	A/mNm
13	Slope of n-M curve	$\Delta n/\Delta M$	3,9	4,1	3,9	4,1	3,9	min^{-1}/mNm
14	Rotor inductance	L	45	90	180	400	700	µH
15	Mechanical time constant	τ_m	4,8	4,8	4,8	4,8	4,7	ms
16	Rotor inertia	J	120	110	120	110	115	gcm²
17	Angular acceleration	$\alpha_{max.}$	119	127	121	124	127	·10³rad/s²
18	Thermal resistance	R_{th1} / R_{th2}	2,5 / 6					K/W
19	Thermal time constant	τ_{w1} / τ_{w2}	50 / 900					s
20	Operating temperature range:							
	– motor		-30 ... +125					°C
	– winding, max. permissible		+155					°C
21	Shaft bearings		ball bearings, preloaded					
22	Shaft load max.:							
	– with shaft diameter		6					mm
	– radial at 3 000 min^{-1} (3 mm from bearing)		60					N
	– axial at 3 000 min^{-1}		6					N
	– axial at standstill		50					N
23	Shaft play:							
	– radial	≤	0,015					mm
	– axial	=	0					mm
24	Housing material		steel, black coated					
25	Mass		390					g
26	Direction of rotation		clockwise, viewed from the front face					
27	Speed up to	$n_{max.}$	7 000					min^{-1}
28	Number of pole pairs		1					
29	Magnet material		NdFeB					
Rated values for continuous operation								
30	Rated torque	M_N	69	99	129	126	131	mNm
31	Rated current (thermal limit)	I_N	4	4	4	2,6	2	A
32	Rated speed	n_N	5 430	5 660	5 510	5 500	5 550	min^{-1}

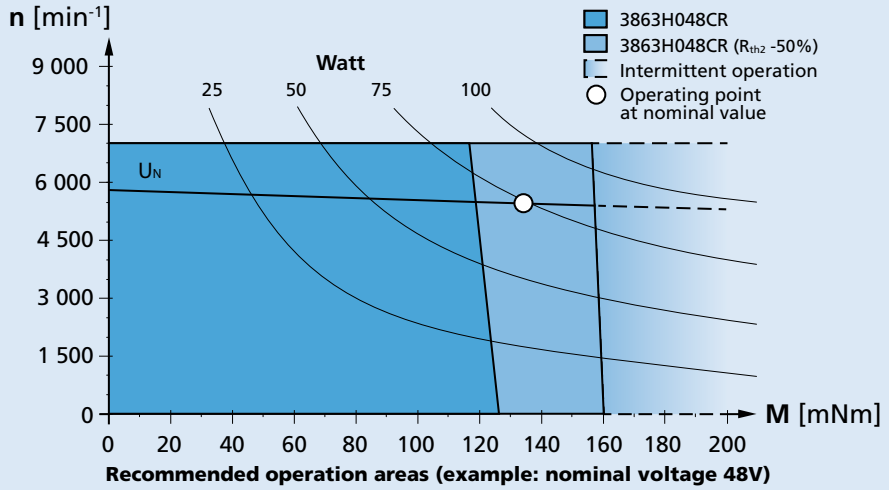
Note: Rated values are calculated with nominal voltage and at a 22°C ambient temperature. The R_{th2} value has been reduced by 25%.

Note:

The diagram indicates the recommended speed in relation to the available torque at the output shaft for a given ambient temperature of 22°C.

The diagram shows the motor in a completely insulated as well as thermally coupled condition (R_{th2} 50% reduced).

The nominal voltage (U_N) curve shows the operating point at nominal voltage in the insulated and thermally coupled condition. Any points of operation above the curve at nominal voltage will require a higher operating voltage. Any points below the nominal voltage curve will require less voltage.



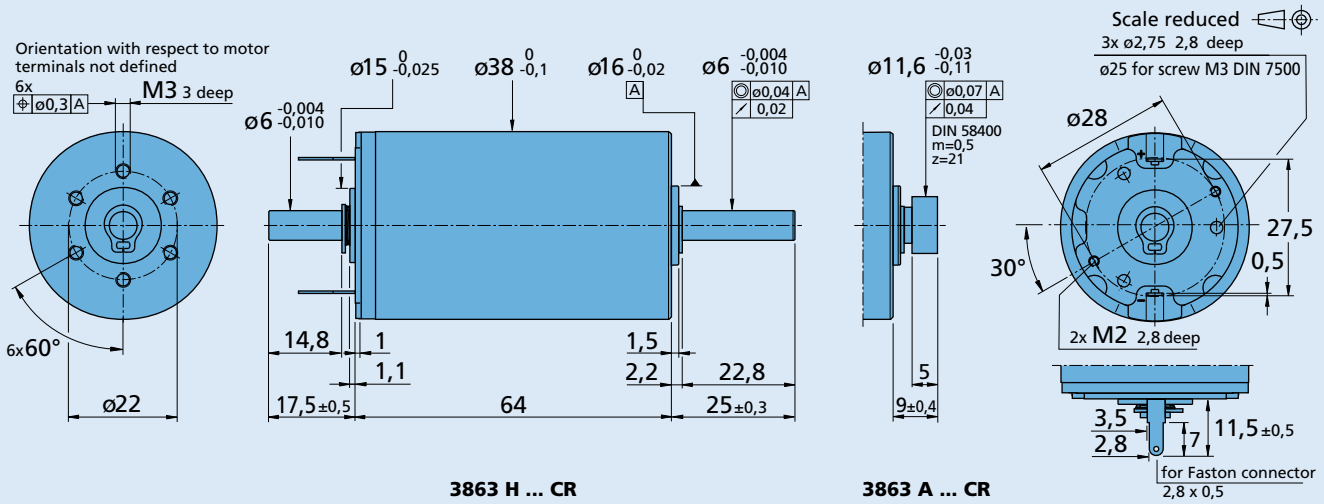
Recommended operation areas (example: nominal voltage 48V)

For notes on technical data and lifetime performance refer to "Technical Information".

Edition 2016

www.faulhaber.com

Dimensional drawing



Options

Example product designation: **3863H012CR-158**

Option	Type	Description
U	Single Leads	For motors with single leads (PTFE), length 160 mm, red (+) / black (-)
158	Shaft end	No second shaft end
2016	Encoder combination	Motor with rear end shaft for combination with Encoder IE3

Product Combination

Precision Gearheads / Lead Screws	Encoders	Drive Electronics	Cables / Accessories
38A	HEDS 5500	SC 2804	MBZ
38/1	HEDM 5500	SC 5004	
38/1 S	IE3-1024	SC 5008	
38/2	IE3-1024 L	MCDC 3006	
38/2 S	HEDS 5540		
44/1	HEDL 5540		

Planetary Gearheads

10 Nm

For combination with
DC-Micromotors
Brushless DC-Motors

Series 38/2 S

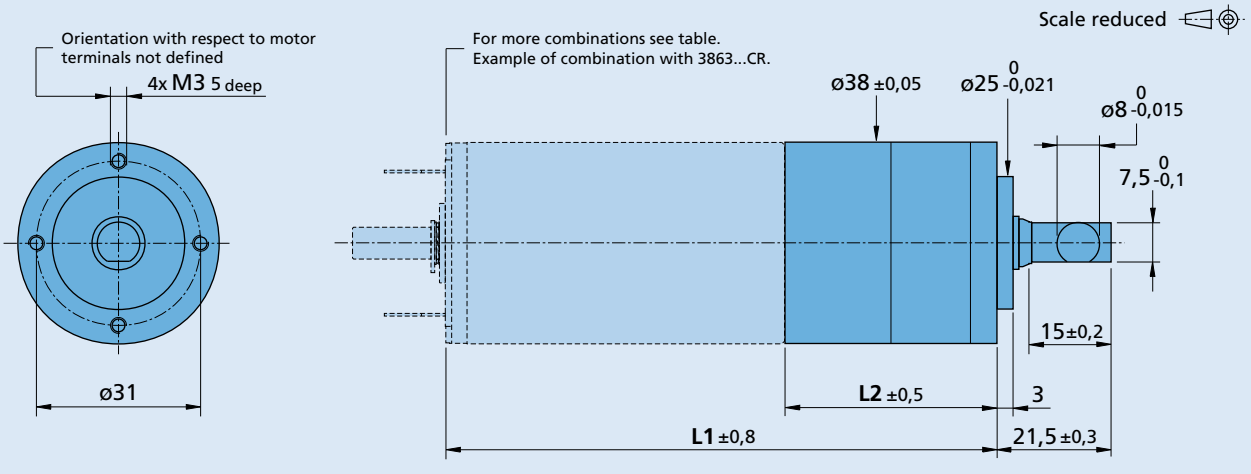
	38/2 S
Housing material	metal
Geartrain material	steel
Recommended max. input speed for:	
– continuous operation	4 000 min^{-1}
Backlash, at no-load	≤ 1 °
Bearings on output shaft	ball bearings, preloaded
Shaft load, max.:	
– radial (10 mm from mounting face)	≤ 300 N
– axial	≤ 300 N
Shaft press fit force, max.	≤ 350 N
Shaft play	
– radial (10 mm from mounting face)	≤ 0,03 mm
– axial	≤ 0,15 mm
Operating temperature range	- 20 ... + 125 °C

Technical data						
Number of gear stages			**2**	**3**	**4**	**5**
Continuous torque		Nm	10	10	10	10
Intermittent torque		Nm	15	15	15	15
Mass without motor, ca.		g	195	245	296	348
Efficiency, max.		%	80	70	60	55
Direction of rotation, drive to output			=	=	=	=
Reduction ratio [1] (rounded)			**14:1**	**43:1** **66:1**	**134:1** **159:1** **246:1**	**415:1** **592:1** **989:1** **1 526:1**
L2 [mm] = length without motor [2]			40,1	47,9	55,7	63,5
L1 [mm] = length with motor	3242G...CR		81,3	89,1	96,9	104,7
	3257G...CR		96,3	104,1	111,9	119,7
	3272G...CR		111,3	119,1	126,9	134,7
	3863A...CR		99,1	106,9	114,7	122,5
	3890A...CR		125,1	132,9	140,7	148,5
	3056K...B		96,1	103,9	111,7	119,5
	3242G...BX4		83,5	91,3	99,1	106,9
	3268G...BX4		109,5	117,3	125,1	132,9
	3274G...BP4		114,1	121,9	129,7	137,5
	3564K...B		104,1	111,9	119,7	127,5

[1] The reduction ratios are rounded, the exact values are available on request or at www.faulhaber.com.
[2] L2 - 0,8 mm, in combination with 3242G...CR, 3257G...CR, 3272G...CR, 3242G...BX4 and 3268G...BX4.
L2 - 5 mm, in combination with 3863A...CR and 3890A...CR.

Note: The gearheads as S-type have all steel gears and heavy duty lubricant for extended lifetime performance.

Scale reduced



38/2 S

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