

DC-Micromotors

Graphite Commutation

137 mNm
98,2 W

Series 3863 ... CR

Values at 22°C and nominal voltage	3863 H	012 CR	018 CR	024 CR	036 CR	048 CR	
Nominal voltage	U_N	12	18	24	36	48	V
Terminal resistance	R	0,161	0,365	0,663	1,55	2,59	Ω
Rotor inductance	L	44,3	92,4	177	398	708	μH
Efficiency, max.	η_{max}	83	84	85	85	86	%
No-load current, typ.	I_0	0,338	0,234	0,163	0,113	0,0845	A
No-load speed	n_0	5 680	5 990	5 800	5 840	5 860	min^{-1}
Stall torque	M_H	1 410	1 370	1 410	1 370	1 460	mNm
Rotor inertia	J	120	110	120	110	115	gcm^2
Friction torque	M_R	6,5	6,5	6,5	6,5	6,5	mNm
Torque constant	k_M	19,9	28,8	39,8	59,8	79,7	mNm/A
Speed constant	k_n	479	332	240	160	120	min^{-1}/V
Slope of n-M curve	$\Delta n/\Delta M$	3,88	4,21	3,99	4,13	3,89	$\text{min}^{-1}/\text{mNm}$
Thermal resistance:							
– winding to housing	R_{th1}	2,8					K/W
– housing to ambient (external plastic flange)	$R_{\text{th2 p}}$	7,7					K/W
– housing to ambient (external metal flange)	$R_{\text{th2 m}}$	1,5					K/W
Thermal time constant:							
– winding	τ_{w1}	58					s
– housing (external plastic flange)	$\tau_{w2 p}$	1 200					s
– housing (external metal flange)	$\tau_{w2 m}$	240					s
Operating temperature range:							
– motor		-30 ... +125					°C
– winding, max. permissible		+155					°C
Shaft bearings		ball bearings, preloaded					
Shaft diameter		6					mm
Radial shaft load max.:							
– dynamic at 3 000 min^{-1} (3 mm from bearing)		60					N
Axial shaft load max.:							
– dynamic at 3 000 min^{-1}		6					N
– static (shaft unsupported)		50					N
– static (shaft supported)		2 800					N
Shaft play, max.:							
– radial		0,015					mm
– axial		0					mm
Speed up to	n_{max}	7 000					min^{-1}
Number of pole pairs		1					
Mass		390					g
Housing material		steel, nickel plated					
Magnet material		NdFeB					
Rated values for continuous operation							
Rated torque	M_N		69,5	99,5	131	132	mNm
Rated current (thermal limit)	I_N		4	4	4	2,71	A
Rated speed	n_N		5 400	5 630	5 440	5 450	min^{-1}

Note: Rated values are calculated with nominal voltage and at a 22°C ambient temperature. The $R_{\text{th2 p}}$ value has been reduced by 50%.

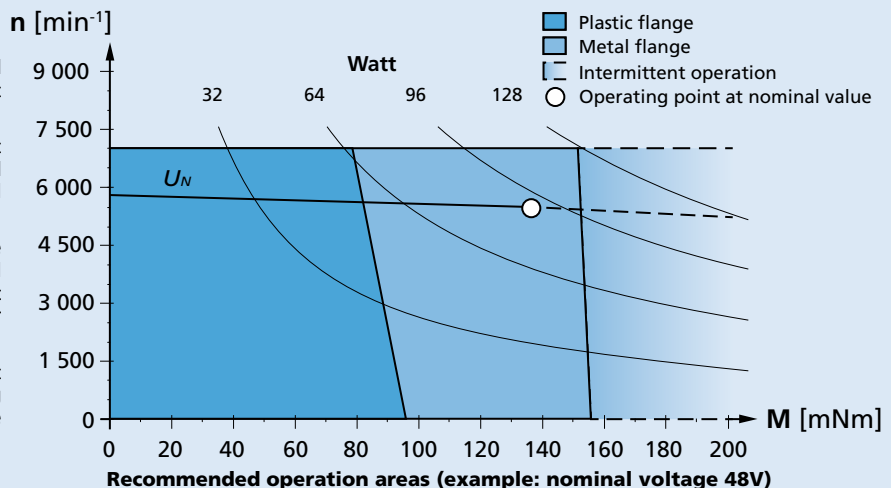
Note:

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

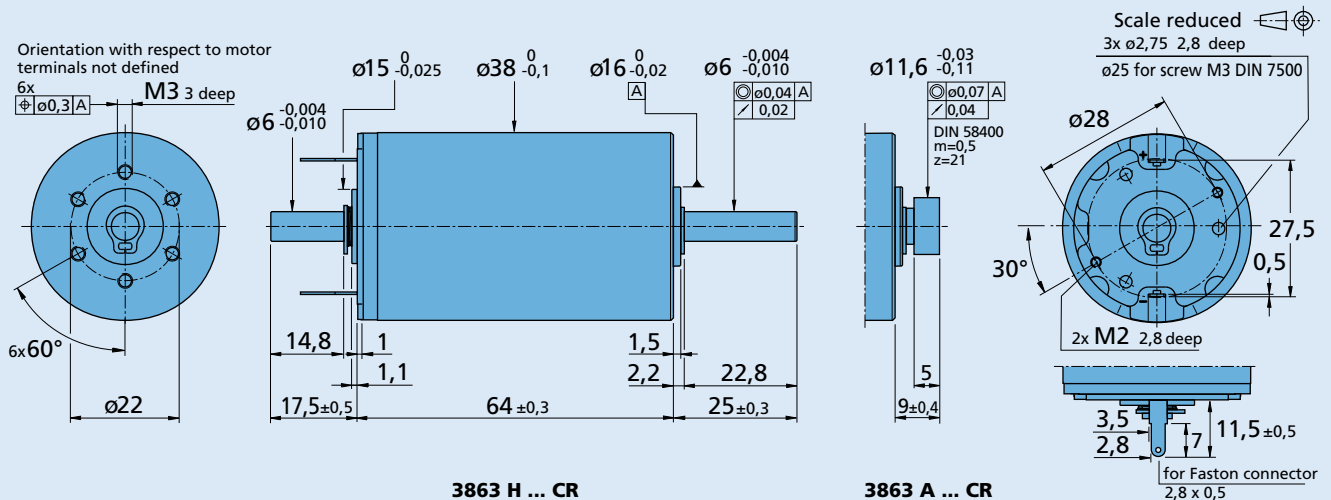
The diagram shows the motor in different conditions of thermal coupling, i.e. mounted respectively on a plastic flange and a metal flange.

The nominal voltage (U_N) curve shows, up to the thermal limit, the operating point at nominal voltage for the motor mounted on a plastic flange. Higher torque can be achieved by further reducing the thermal resistance.

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.



Dimensional drawing



Options

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

[illegible]

Product combination
1. Product A and Product B: This combination is highly popular among customers, especially in the North region. It accounts for approximately 30% of total sales. 2. Product A and Product C: This combination is also popular, particularly in the South region. It accounts for approximately 25% of total sales. 3. Product B and Product C: This combination is less popular than the others, accounting for approximately 15% of total sales. 4. Product A and Product D: This combination is the least popular, accounting for approximately 10% of total sales.

Precision Gearheads / Lead Screws	Encoders	Drive Electronics	Cables / Accessories
38/1 38/1 S 38/2 38/2 S 42GPT 44/1	IE3-1024 IE3-1024 L IERS3-500 IERS3-500 L IER3-10000 IER3-10000 L	SC 2804 S SC 5004 P SC 5008 S MC 3606 B MC 5010 S	MBZ To view our large range of accessory parts, please refer to the “Accessories” chapter.