

# DC-Micromotors

## Graphite Commutation

40 mNm  
34 W

### Series 2657 ... CXR

Values at 22°C and nominal voltage		2657 W	012 CXR	024 CXR	048 CXR	
1	Nominal voltage	$U_N$	12	24	48	V
2	Terminal resistance	R	0,72	2,98	12,61	$\Omega$
3	Output power	$P_{2nom.}$	45,3	45,7	44,1	W
4	Efficiency, max.	$\eta_{max.}$	81	83	83	%
5	No-load speed	$n_0$	5 600	5 800	5 800	$min^{-1}$
6	No-load current, typ. (with shaft $\varnothing$ 4 mm)	$I_0$	0,104	0,052	0,026	A
7	Stall torque	$M_H$	306,7	302,9	283,1	mNm
8	Friction torque	$M_R$	2	2	2	mNm
9	Speed constant	$k_n$	494	247	122	$min^{-1}/V$
10	Back-EMF constant	$k_E$	2,024	4,05	8,205	$mV/min^{-1}$
11	Torque constant	$k_M$	19,33	38,67	78,35	$mNm/A$
12	Current constant	$k_I$	0,052	0,026	0,013	$A/mNm$
13	Slope of n-M curve	$\Delta n/\Delta M$	18,4	19	19,6	$min^{-1}/mNm$
14	Rotor inductance	L	90	365	1 500	$\mu H$
15	Mechanical time constant	$\tau_m$	3,3	3,4	3,5	ms
16	Rotor inertia	J	17	17	17	$gcm^2$
17	Angular acceleration	$\alpha_{max.}$	180	178	172	$\cdot 10^3 rad/s^2$
18	Thermal resistance	$R_{th1} / R_{th2}$	4,4 / 12,6			K/W
19	Thermal time constant	$\tau_{w1} / \tau_{w2}$	28 / 810			s
20	Operating temperature range:					
	– motor		-30 ... +100			$^{\circ}C$
	– winding, max. permissible		+125			$^{\circ}C$
21	Shaft bearings		sintered bearings (standard)	ball bearings, preloaded (optional version)		
22	Shaft load max.:					
	– with shaft diameter		4	4		mm
	– radial at 3 000 $min^{-1}$ (3 mm from bearing)		10	20		N
	– axial at 3 000 $min^{-1}$		2	2		N
	– axial at standstill		50	20		N
23	Shaft play					
	– radial	$\leq$	0,03	0,015		mm
	– axial	$\leq$	0,2	0		mm
24	Housing material		steel, zinc galvanized and passivated			
25	Mass		156			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			
<b>Rated values for continuous operation</b>						
30	Rated torque	$M_N$	39	40	40	mNm
31	Rated current (thermal limit)	$I_N$	2,4	1,2	0,61	A
32	Rated speed	$n_N$	5 040	5 110	5 050	$min^{-1}$

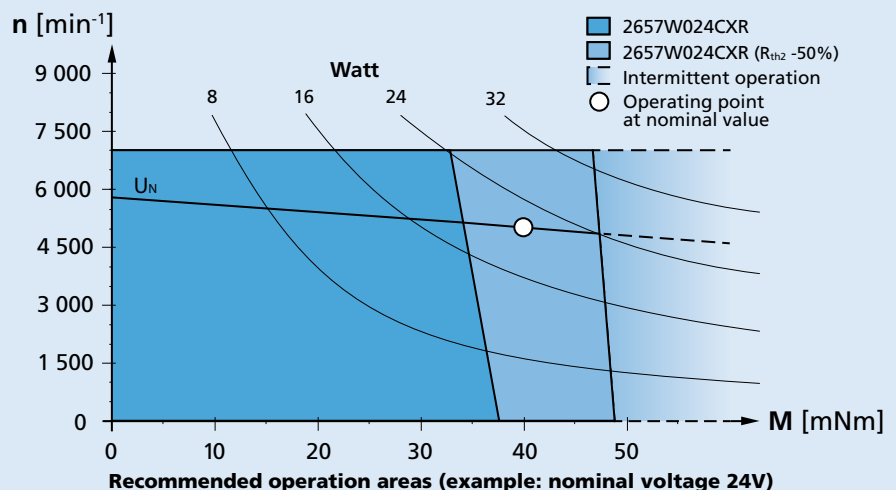
**Note:** Rated values are calculated with nominal voltage and at a 22°C ambient temperature. The  $R_{th2}$  value has been reduced by 25%.

**Note:**

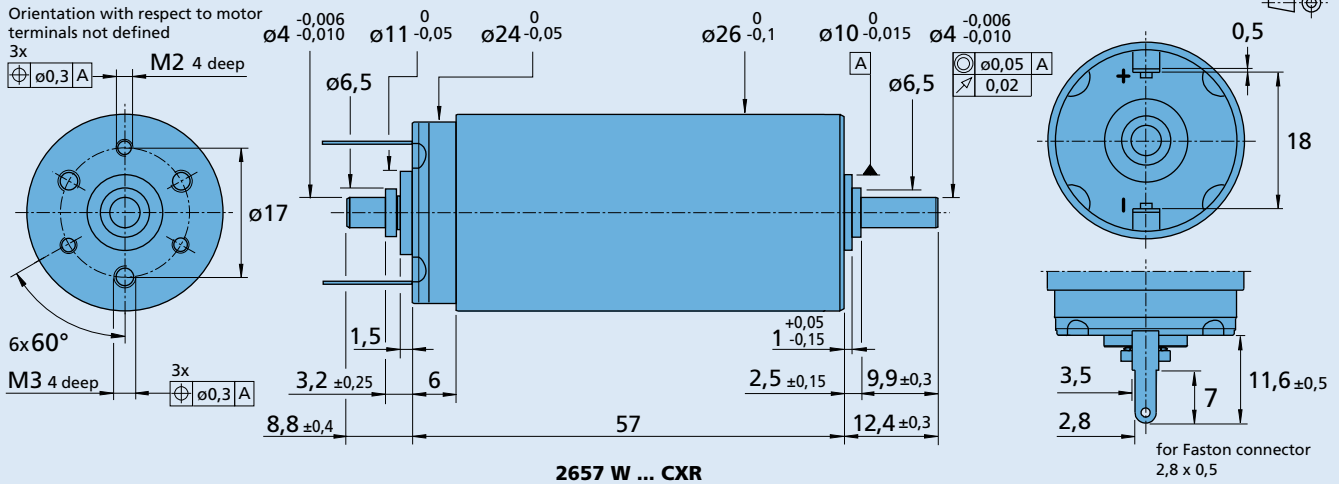
The diagram indicates the recommended speed in relation to the available torque at the output shaft for a given ambient temperature of 22°C.

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.



### Dimensional drawing



### Options

Example product designation: **2657W012CXR-275**

Option	Type	Description
U	Single Leads	For motors with single leads (PTFE), length 160 mm, red (+) / black (-)
158	Shaft end	No second shaft end
275	Ball bearings	Motor with 2 preloaded ball bearings.

### Product Combination

Precision Gearheads / Lead Screws	Encoders	Drive Electronics	Cables / Accessories
26A	HEDS 5500	SC 2402	MBZ
26/1	HEDM 5500	SC 2804	
26/1 S	IE3-1024	SC 5004	
30/1	IE3-1024 L	SC 5008	
30/1 S	HEDS 5540	MCDC 3003	
32A	HEDL 5540	MCDC 3006	
BS22-1.5			