

Stepper Motors

2,4 mNm

Two phase with Disc Magnet, 20 steps per revolution,
microstepping motor

Series DM1220

Values at 20°C	DM1220	0330	0220	0110	0055	
Nominal current per phase (both phases ON)		0,33	0,22	0,11	0,055	A
Boosted current per phase (both phases ON)		0,66	0,44	0,22	0,11	A
Nominal voltage per phase (both phases ON)		2	3	6	12	V
Phase resistance		4,5	10,4	41	168	Ω
Phase inductance (1 kHz)		1,3	3,5	13	57	mH
Holding torque (at nominal current in both phases)		2,4	2,4	2,4	2,4	mNm
Holding torque at boosted current		4,1	4,1	4,1	4,1	mNm
Residual torque, typ.		0,07	0,07	0,07	0,07	mNm
Back-EMF amplitude		1,7	2,6	5	10	V/k step/s
Electrical time constant	0,28					ms
Rotor inertia	18,5 · 10 ⁻⁹					kgm ²
Step angle (full step)	18					°
Angular accuracy	±3					%
Angular acceleration, max.	221 · 10 ³					rad/s ²
Resonance frequency (at no load)	55					Hz
Thermal resistance	11,9 / 46,5					K/W
Thermal time constant	5 / 300					s
Operating temperature range	-35 ... +70					°C
Winding temperature, max.	+130					°C
Shaft bearings ^{1) 2)}	sintered bearing (Bearing code: SB)		ball bearings, preloaded (Bearing code: 2R)			
Shaft load max.:						
– with shaft diameter	1,5		1,5			mm
– radial at 5 000 min ⁻¹ (3 mm from bearing)	0,5		6			N
– axial at 5 000 min ⁻¹	3		3			N
– axial at standstill	3		17			N
Shaft play:						
– radial	0,015		0,012			mm
– axial	0		0			mm
Housing material	aluminium, black anodized					
Mass	9					g
Magnet material	NdFeB					

¹⁾ Special lubricant options available on request.

²⁾ 2 preloaded ball bearings available on request for vacuum / low temperature (bearing code: RC).

Driver settings

Relevant for 2 phases ON only.
On PWM drivers or chopper (current mode),
the current is set to the nominal value and
the supply voltage is typically 2.5 to 5x higher
than the nominal voltage.

Curves measured with a load inertia of
20 · 10⁻⁹ kgm², in half-step mode for the
"1 x nominal voltage" curve, in 1/4 micro-
stepping mode for the other curves.



