

Stepper Motors

2,4 mNm

Two phase, 20 steps per revolution

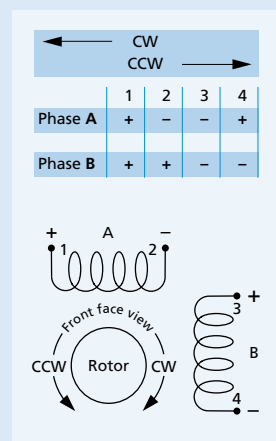
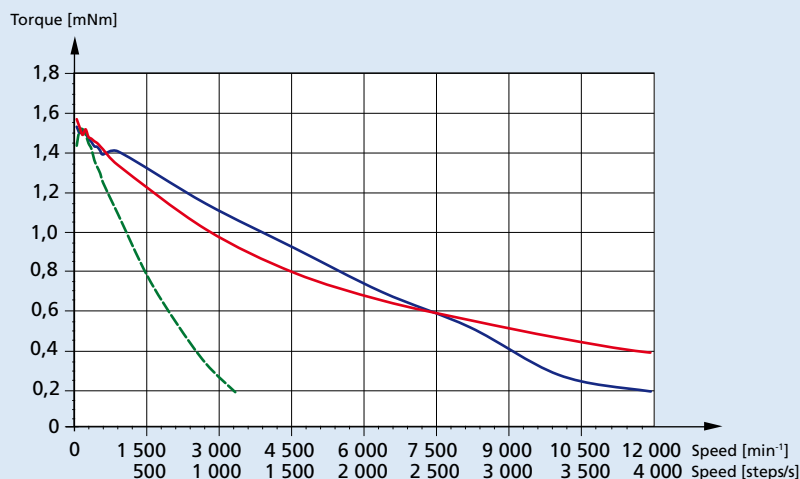
microstepping motor (low residual torque), PRECstep® Technology

Series DM1220

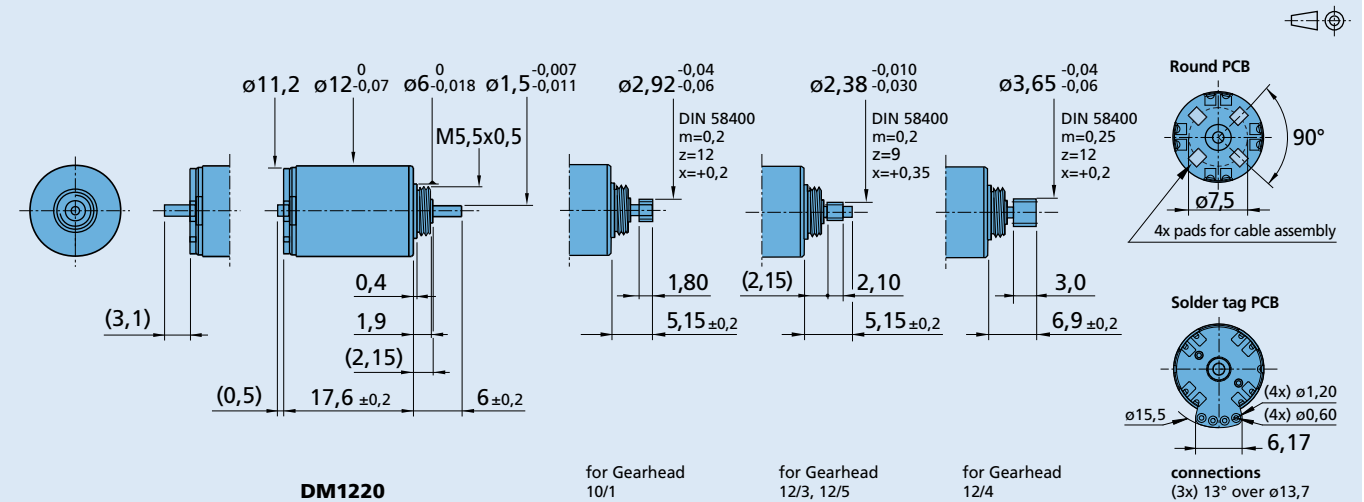
	DM1220 ...	0330	0220	0110	0055					
		Current	Voltage	Current	Voltage	Current	Voltage	Current	Voltage	Drive mode
1	Nominal current per phase (both phases ON) ¹⁾	0,33	–	0,22	–	0,11	–	0,055	–	A
2	Nominal voltage per phase (both phases ON) ¹⁾	–	2	–	3	–	6	–	12	V DC
3	Phase resistance (at 20°C)		4,5		10,4		41		168	Ω
4	Phase inductance (1kHz)		1,3		3,5		13		57	mH
5	Back-EMF amplitude		1,7		2,6		5,0		10,0	V/k step/s
6	Holding torque (at nominal current in both phases)	2,4								mNm
7	Holding torque (at twice the nominal current)	4,1								mNm
8	Step angle (full step)	18								degree
9	Angular accuracy ¹⁾	± 3								% of full step
10	Residual torque, max.	0,15								mNm
11	Rotor inertia	18,5								·10 ⁻⁹ kgm ²
12	Resonance frequency (at no load)	128								Hz
13	Electrical time constant	0,28								ms
14	Ambient temperature range	–35 ... +70								°C
15	Winding temperature tolerated, max.	130								°C
16	Thermal resistance	<i>R_{th1} / R_{th2}</i>	11,9 / 46,5							°C/W
17	Thermal time constant	<i>τ_{w1} / τ_{w2}</i>	5 / 300							s
18	Shaft bearings	sintered sleeve bearings (standard)			ball bearings, preloaded (optional)					
19	Shaft load, max.:									
	– radial (3 mm from bearing)	0,5				6,0				N
	– axial	3,0				3,0				N
20	Shaft play, max.:									
	– radial (0,2N)	15				12				μm
	– axial (0,2N)	~0				~0				μm
21	Mass	9								g

¹⁾ 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 3 to 5x higher than the nominal voltage.

²⁾ 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.



Dimensional drawing



Combinations

Drive Electronics	Encoders	Cables	Gearheads / Lead screws
MCST3601			
		List available on request	10/1 12/3 12/4 12/5* Lead screws M2 - M3
			* Zero Backlash Gearheads

Ordering information

Example: **DM12202R033051**

Motor type	Bearings	Winding	Motor execution		
DM = Motor design 12 = Motor diameter (mm) 20 = Steps per revolution	Special lubricant options available		Only front output shaft	With double output shaft	Front output shaft
DM1220	SB (sleeve bearings) 2R (2 ball bearings) RC (2 ball bearings, vacuum/low temp.)	0330 0220 0110 0055	51 (Round PCB) 55 (Round PCB) 57 (Round PCB) 59 (Round PCB) 83 (Round PCB) 31 (Solder tag PCB) 35 (Solder tag PCB) 37 (Solder tag PCB) 39 (Solder tag PCB) 53 (Solder tag PCB)	50 (Round PCB) 56 (Round PCB) 58 (Round PCB) 60 (Round PCB) 82 (Round PCB) 30 (Solder tag PCB) 34 (Solder tag PCB) 36 (Solder tag PCB) 38 (Solder tag PCB) 52 (Solder tag PCB)	Plain shaft, plain shaft for lead screw M3 Pinion 10/1 Pinion 12/3, 12/5 Pinion 12/4 Plain shaft for lead screw M2 Plain shaft, plain shaft for lead screw M3 Pinion 10/1 Pinion 12/3, 12/5 Pinion 12/4 Plain shaft for lead screw M2