

# Stepper Motors

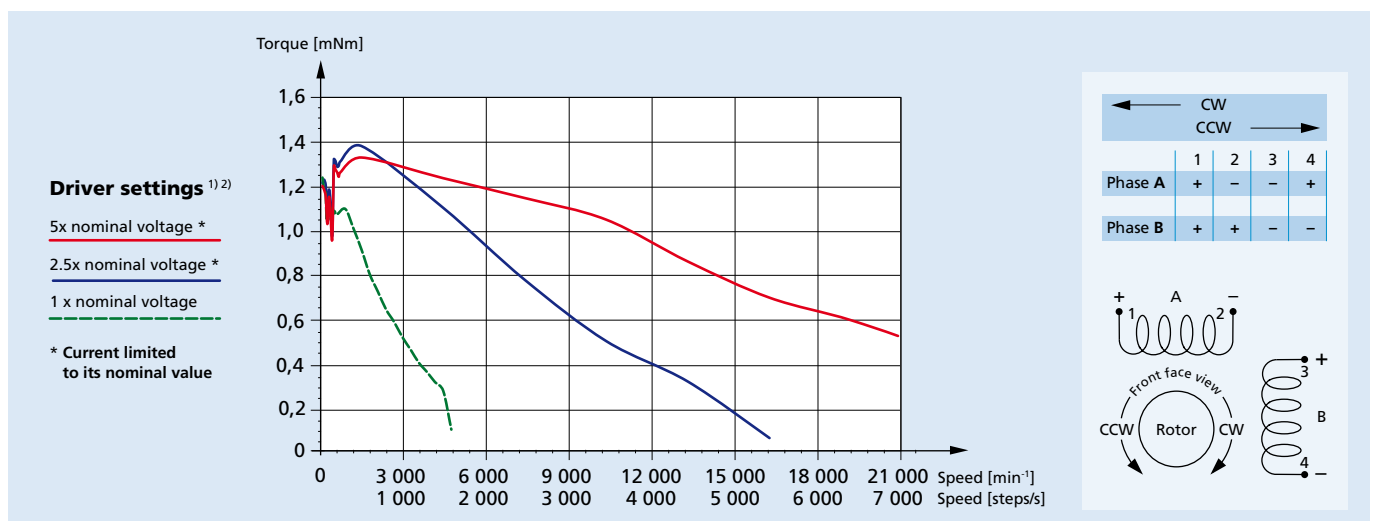
1,6 mNm

Two phase, 20 steps per revolution  
PRECiStep® Technology

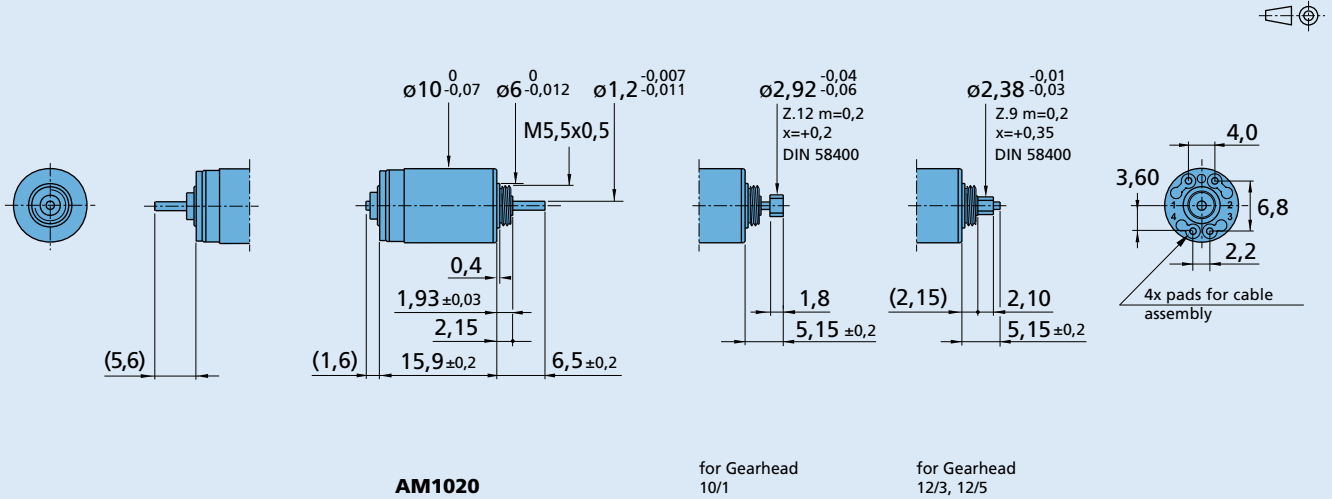
## Series AM1020

AM1020 ...	0250		0180		0090		0045		Drive mode	
	Current	Voltage	Current	Voltage	Current	Voltage	Current	Voltage		
1 Nominal current per phase (both phases ON) <sup>1)</sup>	0,25	–	0,18	–	0,09	–	0,045	–	A	
2 Nominal voltage per phase (both phases ON) <sup>1)</sup>	–	2	–	3	–	6	–	12	V DC	
3 Phase resistance (at 20°C)	8		16		65		250		Ω	
4 Phase inductance (1kHz)	2,4		5,2		21,4		80,1		mH	
5 Back-EMF amplitude	1,8		2,6		5,3		10,5		V/k step/s	
6 Holding torque (at nominal current in both phases)	1,6								mNm	
7 Holding torque (at twice the nominal current)	2,4								mNm	
8 Step angle (full step)	18								degree	
9 Angular accuracy <sup>1)</sup>	± 10								% of full step	
10 Residual torque, max.	0,20								mNm	
11 Rotor inertia	9								·10 <sup>-9</sup> kgm <sup>2</sup>	
12 Resonance frequency (at no load)	140								Hz	
13 Electrical time constant	0,32								ms	
14 Ambient temperature range	–35 ... +70								°C	
15 Winding temperature tolerated, max.	130								°C	
16 Thermal resistance	<i>R<sub>th1</sub> / R<sub>th2</sub></i>	3,9 / 53,8							°C/W	
17 Thermal time constant	<i>τ<sub>w1</sub> / τ<sub>w2</sub></i>	4,5 / 200							s	
18 Shaft bearings	sintered sleeve bearings (standard)				ball bearings, preloaded (optional)					
19 Shaft load, max.:										
– radial (3 mm from bearing)	0,3				4,0					N
– axial	0,3				3,0					N
20 Shaft play, max.:										
– radial (0,2N)	15				12					μm
– axial (0,2N)	150				–0					μm
21 Mass	5,5								g	

- <sup>1)</sup> 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.  
<sup>2)</sup> Curves measured with a load inertia of 6 · 10<sup>-9</sup> kgm<sup>2</sup>, 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
<b>MCST3601</b>	Available on request	List available on request	<b>10/1</b> <b>12/3</b> <b>12/5*</b> Lead screws <b>M1,2 M1,6</b> Lead screws <b>M2 - M3</b>

\* Zero Backlash Gearheads

### Ordering information

Example: **AM10202R018008**

Motor type	Bearings	Winding	Motor execution		
AM = Motor design 10 = Motor diameter (mm) 20 = Steps per revolution	Special lubricant options available		Only front output shaft	With double output shaft	Front output shaft
<b>AM1020</b>	<b>SB</b> (sleeve bearings) <b>2R</b> (2 ball bearings) <b>RC</b> (2 ball bearings, vacuum/low temp.)	<b>0180</b> <b>0090</b> <b>0045</b> <b>0250</b>	<b>01</b> <b>08</b> <b>10</b>	<b>00</b> <b>09</b> <b>11</b> <b>12</b> <b>13</b> <b>14</b> <b>20</b> <b>22</b> <b>24</b>	Plain shaft Pinion 10/1 Pinion 12/5, 12/3 Plain shaft, Rear = 3,7mm for encoder Pinion 10/1, Rear = 3,7mm for encoder Pinion 12/5, 12/3 Rear = 3,7mm for encoder Plain shaft for lead screw M1,2 Plain shaft for lead screw M2 - M3 Plain shaft for lead screw M1,6