

# Stepper Motors

0,65 mNm

Two phase, 20 steps per revolution  
PREClstep® Technology

## AM0820-ww-ee

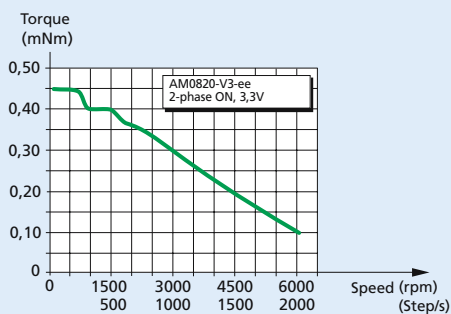
	ww =	V-3-18		V-5-56		A-0,225-7		Drive mode
		Voltage	Current	Voltage	Current	Voltage	Current	
1 Nominal voltage		3	–	5	–	2	–	V DC
2 Nominal current per phase (both phases ON)		–	0,15	–	0,08	–	0,225	A
3 Phase resistance (at 20°C)			18		56		7,3	Ω
4 Phase inductance (1kHz)			5,2		16		2,1	mH
5 Back-EMF amplitude			0,8		1,4		0,5	V/k step/s
6 Holding torque <sup>1)</sup> (at nominal current in both phases)	0,65							mNm
7 Holding torque <sup>1)</sup> (at twice the nominal current)	1							mNm
8 Step angle (full step)	18							degree
9 Angular accuracy <sup>2)</sup>	± 10							% of full step
10 Residual torque	0,06							mNm
11 Rotor inertia	2,75							·10 <sup>-9</sup> kgm <sup>2</sup>
12 Resonance frequency (at no load)	170							Hz
13 Electrical time constant	0,29							ms
14 Ambient temperature range	–30 ... +70							°C
15 Winding temperature tolerated, max.	130							°C
16 Thermal resistance winding-ambient air	76							°C/W
17 Thermal time constant	180							s
18 Shaft bearings	sintered bronze sleeves (standard)			ball bearings, preloaded (optional)				
19 Shaft load, max.:								
– radial (3 mm from bearing)	0,3			3,0				N
– axial	0,2			1,5				N
20 Shaft play, max.:								
– radial (0,2N)	15			12				µm
– axial (0,2N)	140			~0				µm
21 Isolation test voltage	200							V DC
22 Motor dimensions:								
– diameter	8							mm
– length	13,8							mm
– shaft diameter	1,0							mm
23 Weight	3,3							g

<sup>1)</sup> with bipolar driver

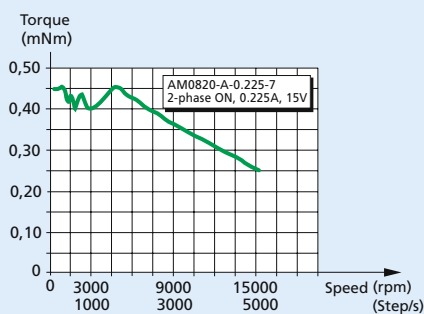
<sup>2)</sup> 2 phases ON, balanced phase currents

<sup>3)</sup> Curves measured with a load inertia of 10 · 10<sup>-9</sup> kgm<sup>2</sup>

<sup>4)</sup> Testing the motor at lower supply voltages in current mode will result in a decrease in torque at higher speed, even with the same current setting



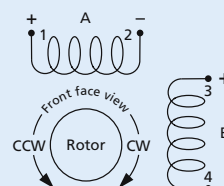
Voltage mode (V) <sup>3)</sup>  
Driver AD VL M1S



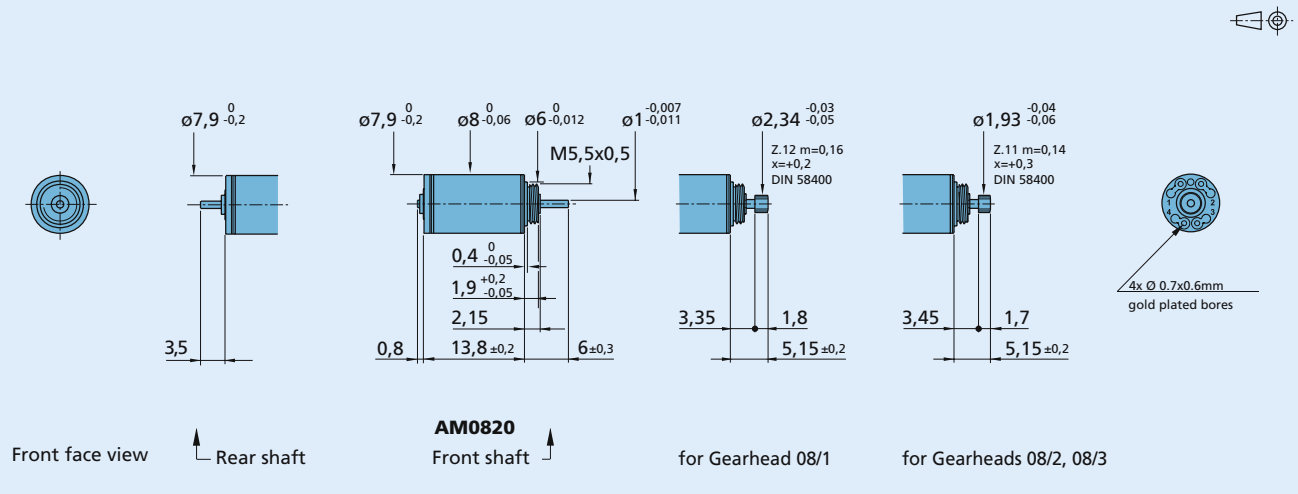
Current mode (A) <sup>3) 4)</sup>  
Driver AD CM M1S

← CW  
CCW →

	1	2	3	4
Phase A	+	–	–	+
Phase B	+	+	–	–



### Dimensional drawing



### Combinations

Drive Electronics	Encoders	Stepper Motors	Gearheads / Lead screws
<b>AD VL M_S</b> <b>AD CM M_S</b>		<b>AM0820</b>	<b>08/1</b> <b>08/2</b> <b>08/3*</b> <b>10/1</b> <b>Lead screws M1,2</b> <b>Lead screws M1,6</b> <b>Lead screws M2</b>

\* Zero Backlash Gearheads

### Ordering information

Example: **AM0820-2R-V-3-18-08**

Motor type	Bearings (rr)	Winding (www)	Motor execution (ee)		
			Only front output shaft	With double output shaft	Front output shaft
AM = Motor design 08 = Motor diameter (mm) 20 = Steps per revolution <b>AM0820</b>	Special lubricant options available - (sleeve bearings) <b>-2R</b> (2 ball bearings)	<b>-V-3-18</b> <b>-V-5-56</b> <b>-A-0,225-7</b>	<b>-01</b> <b>-08</b> <b>-10</b> <b>-12</b> <b>-21</b> <b>-23</b> <b>-25</b>	<b>-00</b> <b>-09</b> <b>-11</b> <b>-13</b> <b>-20</b> <b>-22</b> <b>-24</b>	Plain shaft Pinion 08/1 Pinion 10/1 Pinion 08/2, 08/3 Plain shaft <sup>1)</sup> Plain shaft <sup>2)</sup> Plain shaft <sup>3)</sup>

- <sup>1)</sup> Prepared for assembly of lead screws size M1,2
- <sup>2)</sup> Idem for size M2
- <sup>3)</sup> Idem for size M1,6