

# Stepper Motors

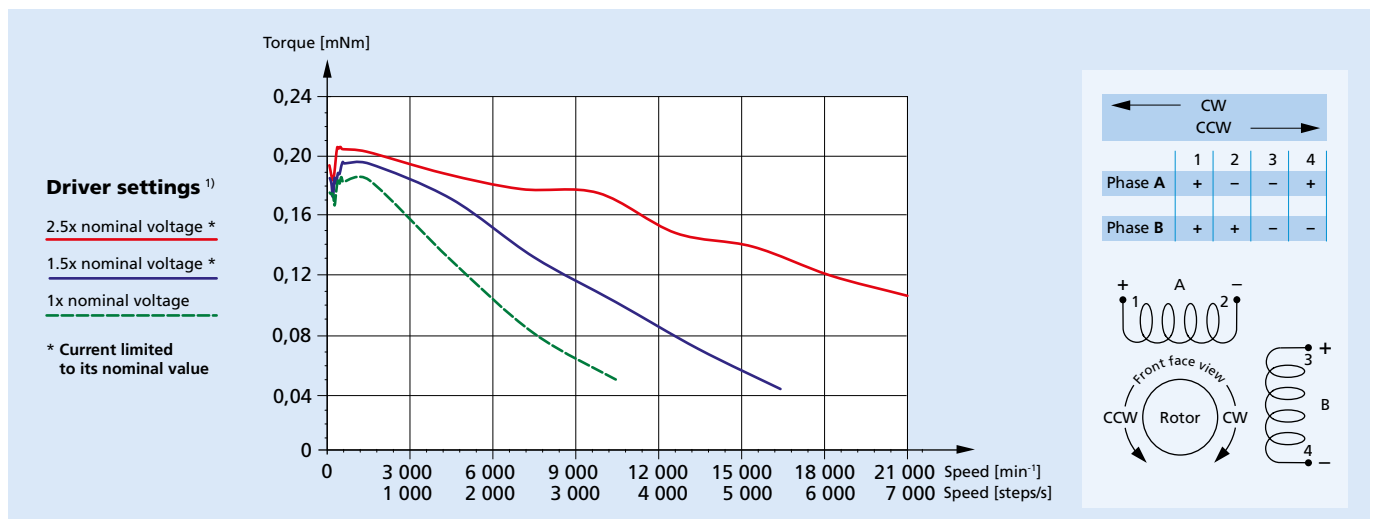
0,25 mNm

Two phase, 20 steps per revolution  
PREClstep® Technology

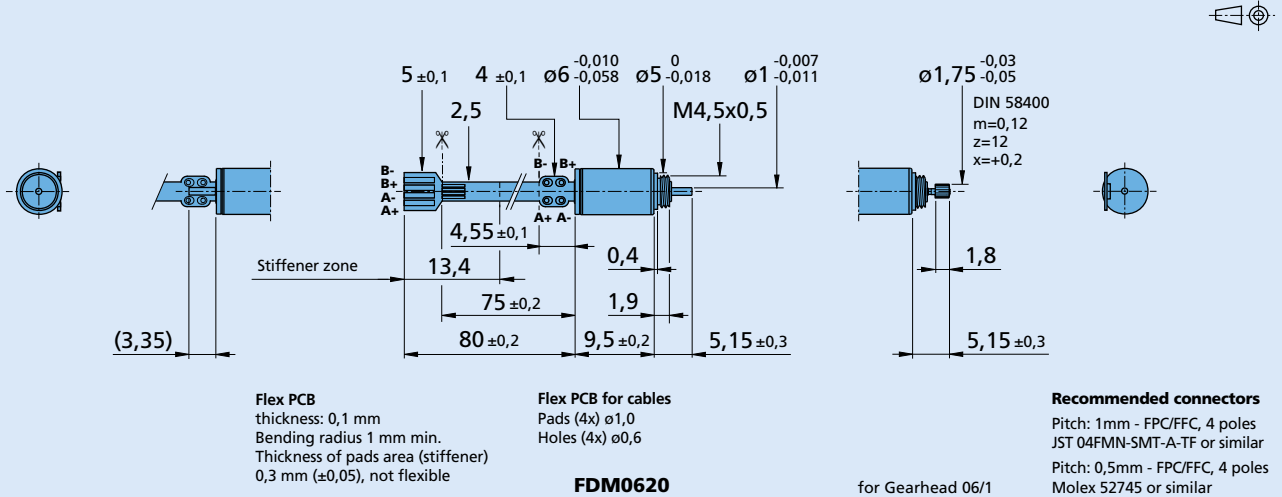
## FDM0620-ww-ee

ww =		V2		V3		V6		Drive mode	
		Current	Voltage	Current	Voltage	Current	Voltage		
1	Nominal current per phase (both phases ON)	0,13	–	0,08	–	0,04	–	A	
2	Nominal voltage per phase (both phases ON)	–	2	–	3	–	6	V DC	
3	Phase resistance (at 20°C)	13,6		30		120		Ω	
4	Phase inductance (1kHz)	2		4,5		18,5		mH	
5	Back-EMF amplitude	0,53		0,83		1,6		V/k step/s	
6	Holding torque (at nominal current in both phases)	0,25							mNm
7	Holding torque (at twice the nominal current)	0,39							mNm
8	Step angle (full step)	18							degree
9	Angular accuracy	± 5							% of full step
10	Residual torque, max.	0,06							mNm
11	Rotor inertia	0,5							·10 <sup>-9</sup> kgm <sup>2</sup>
12	Resonance frequency (at no load)	60							Hz
13	Electrical time constant	0,15							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>							°C/W
17	Thermal time constant	<i>τ<sub>w1</sub> / τ<sub>w2</sub></i>							s
18	Shaft bearings	Sintered sleeve bearing (standard)			ball bearings, preloaded (optional)				
19	Shaft load, max.:								
	– radial (3 mm from bearing)	0,3			3,0				N
	– axial	0,5			0,5				N
20	Shaft play, max.:								
	– radial (0,2N)	20			12				μm
	– axial (0,2N)	~0			~0				μm
21	Mass	1,1							g

<sup>1)</sup> On PWM drivers or chopper (current mode), the current is set to the nominal value and the supply voltage is typically 1 to 3x higher than the nominal voltage. Microstepping is recommended below 200 steps/s. Curves measured with a load inertia of 3.10-9 kgm<sup>2</sup>.



### Dimensional drawing



### Combinations

Drive Electronics	Encoders	Cables	Gearheads / Lead screws
<p><b>MCST3601</b></p>		<p>Complete list available on request</p>	<p><b>06/1</b> Lead screws <b>M1,2 - M1,6</b></p>

### Ordering information

Example: **FDM0620-2R-V3-10**

Motor type	Bearings (rr)	Winding (ww)	Motor execution (ee)		
FDM = Motor design 06 = Motor diameter (mm) 20 = Steps per revolution <b>FDM0620</b>	Special lubricant options available - (sleeve bearing) <b>-2R</b> (2 ball bearings)	<b>-V2</b> <b>-V3</b> <b>-V6</b>	Only front output shaft <b>-31</b> (Flex PCB 80mm p=1mm) <b>-35</b> (Flex PCB 80mm p=1mm) <b>-76</b> (Flex PCB 80mm p=1mm) <b>-78</b> (Flex PCB 80mm p=1mm)	With double output shaft <b>-30</b> (Flex PCB 80mm p=1mm) <b>-36</b> (Flex PCB 80mm p=1mm) <b>-75</b> (Flex PCB 80mm p=1mm) <b>-77</b> (Flex PCB 80mm p=1mm)	Front output shaft Plain shaft $\phi 1\text{mm}$ Pinion 06/1 for lead screw M1,2 for lead screw M1,6

Note : Standard version is delivered with a flex PCB of 80mm that the user can cut himself as indicated on the drawing above. A version with pre-cut PCB is available on request.