Stepper Motors

Two phase, 20 steps per revolution

Series AM0820

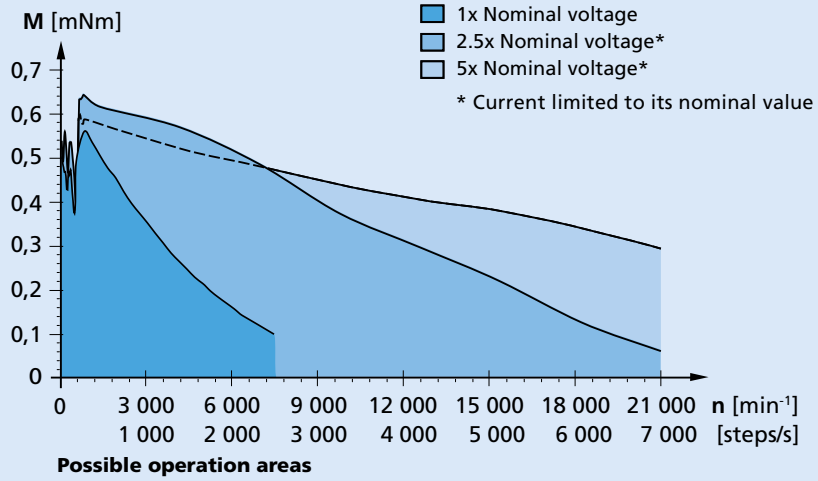
Values at 20°C	AM0820	0225	0150	0080	
Nominal current per phase (both phases ON)		0,225	0,15	0,08	A
Boosted current per phase (both phases ON)		0,45	0,3	0,16	A
Nominal voltage per phase (both phases ON)		2	3	5	V
Phase resistance		7,3	18	56	Ω
Phase inductance (1 kHz)		1,4	3,9	12,6	mH
Holding torque (at nominal current in both phases)		0,65	0,65	0,65	mNm
Holding torque at boosted current		1	1	1	mNm
Residual torque, typ.		0,13	0,13	0,13	mNm
Back-EMF amplitude		0,8	1,3	2,4	V/k step/s
Electrical time constant	0,21				ms
Rotor inertia	$2{,}75 \cdot 10^{-9}$				kgm²
Step angle (full step)	18				°
Angular accuracy, typ.	±10				%
Angular acceleration, max.	$363 \cdot 10^{3}$				rad/s²
Resonance frequency (at no load)	75				Hz
Thermal resistance	4,1 / 65,3				K/W
Thermal time constant	3,5 / 160				s
Operating temperature range	-30 ... +70				°C
Winding temperature, max.	+130				°C
Shaft bearings [1] [2]	sintered bearings (Bearing code: SB)	ball bearings, preloaded (Bearing code: 2R)			
Shaft load max.:					
– with shaft diameter	1	1			mm
– radial at 5 000 min^{-1} (3 mm from bearing)	0,3	3			N
– axial at 5 000 min^{-1}	0,2	1,5			N
– axial at standstill	0,2	5,8			N
Shaft play:					
– radial	0,015	0,012			mm
– axial	0,14	0			mm
Housing material	aluminium, black anodized				
Mass	3,3				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 $6 \cdot 10^{-9}$ kgm², in half-step mode for the "1 x nominal voltage" curve, in 1/4 micro-stepping mode for the other curves.



Possible operation areas

For notes on technical data and lifetime performance refer to "Technical Information".

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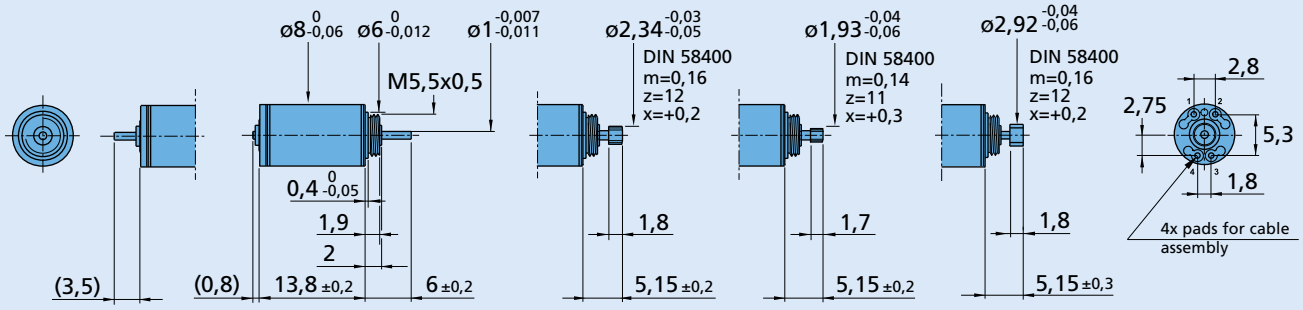
Dimensional drawing



AM0820

for Gearhead 08/1

for Gearhead 08/2, 08/3

for Gearhead 10/1

Options and connection information

Example product designation: **AM08202R015001**

Motor executions front shaft	Motor executions double shaft	Front shaft description
01	00	Plain shaft
08	09	With pinion for gearheads 08/1
10	11	With pinion for gearheads 10/1
12	13	With pinion for gearheads 08/2, 08/3
21	20	Plain shaft for lead screw M1,2
23	22	Plain shaft for lead screw M2 - M3
25	24	Plain shaft for lead screw M1,6
	40	Plain shaft for encoder IEP3-4096 (an additional motor cable is mandatory)
	41	With pinion for gearheads 08/1 with encoder IEP3-4096 (an additional motor cable is mandatory)
	42	With pinion for gearheads 10/1 with encoder IEP3-4096 (an additional motor cable is mandatory)
	43	With pinion for gearheads 08/2, 08/3 with encoder IEP3-4096 (an additional motor cable is mandatory)
	44	Plain shaft for lead screw M1,2 with encoder IEP3-4096 (an additional motor cable is mandatory)
	45	Plain shaft for lead screw M2 - M3 with encoder IEP3-4096 (an additional motor cable is mandatory)
	46	Plain shaft for lead screw M1,6 with encoder IEP3-4096 (an additional motor cable is mandatory)

Connection	
No.	Function
1	Phase A +
2	Phase A -
3	Phase B +
4	Phase B -

Option	Description
Single leads	PTFE single leads length 50/100/150/300 mm
Connector	PVC single leads length 50/100/150/300 mm or ETFE/PTFE single leads length 150 mm with connector Molex 51021-0400

Product combination

Precision Gearheads / Lead Screws	Encoders	Drive Electronics	Cables / Accessories
08/1 08/2 08/3 10/1 M1,2 x 0,25 x L1 M1,6 x 0,35 x L1 M2 x 0,2 x L1 M3 x 0,5 x L1 08L ... SL 08L ... HL 10L ... SL 10L ... HL	IEP3-4096	MC 3602 B MCST 3601	Detailed cable options can be found in Application Note AN 010 to be downloaded on FAULHABER website.

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