

Stepper Motors

22 mNm

Two phase, 24 steps per revolution
PRECstep® Technology

AM2224-ww-ee

ww =		AV-0,9		AV-4,8		AV-18		V-12-75		Drive mode
1	Nominal current per phase (both phases ON) ¹⁾	Current	–	Current	–	Current	–	Current	–	A
2	Nominal voltage per phase (both phases ON) ¹⁾	1,0	–	0,5	–	0,25	–	0,125	–	V DC
		–	1,4	–	3	–	6	–	12	
3	Phase resistance (at 20°C)	0,9		4,8		18		75		Ω
4	Phase inductance (1kHz)	0,9		4,3		16,3		65,6		mH
5	Back-EMF amplitude	3,8		8,3		16,3		32,7		V/k step/s
6	Holding torque (at nominal current in both phases)	22								mNm
7	Holding torque (at twice the nominal current)	37								mNm
8	Step angle (full step)	15								degree
9	Angular accuracy ¹⁾	± 10								% of full step
10	Residual torque, max.	2								mNm
11	Rotor inertia	253								·10 ⁻⁹ kgm ²
12	Resonance frequency (at no load)	100								Hz
13	Electrical time constant	1,7								ms
14	Ambient temperature range	–35 ... +70								°C
15	Winding temperature tolerated, max.	130								°C
16	Thermal resistance winding-ambient air	<i>R_{th1}</i> / <i>R_{th2}</i>	4,8 / 20,4							°C/W
17	Thermal time constant	<i>τ_{w1}</i> / <i>τ_{w2}</i>	10 / 620							s
18	Shaft bearings	sintered sleeve bearings (standard with 2 mm shaft)				ball bearings, preloaded (optional)				
19	Shaft load, max.:									
	– radial (3 mm from bearing)	1,5				8,0				N
	– axial	0,5				4,0				N
20	Shaft play, max.:									
	– radial (0,2N)	30				15				μm
	– axial (0,2N)	200				~0				μm
21	Mass	43								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 8x higher than the nominal voltage.

²⁾ Curves measured with a load inertia of 600 · 10⁻⁹ kgm², in half-step mode for the "1 x nominal voltage" curve, in 1/4 micro-stepping mode for the other curves.

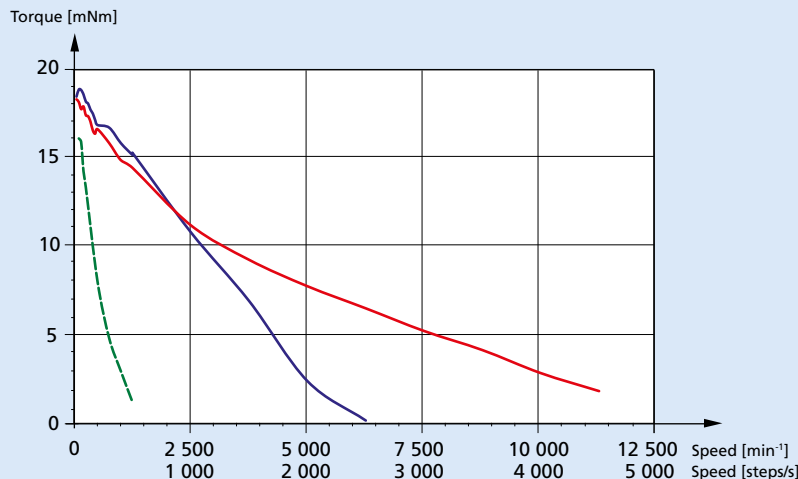
Driver settings ^{1) 2)}

8x nominal voltage *

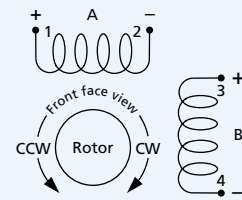
4x nominal voltage *

1 x nominal voltage

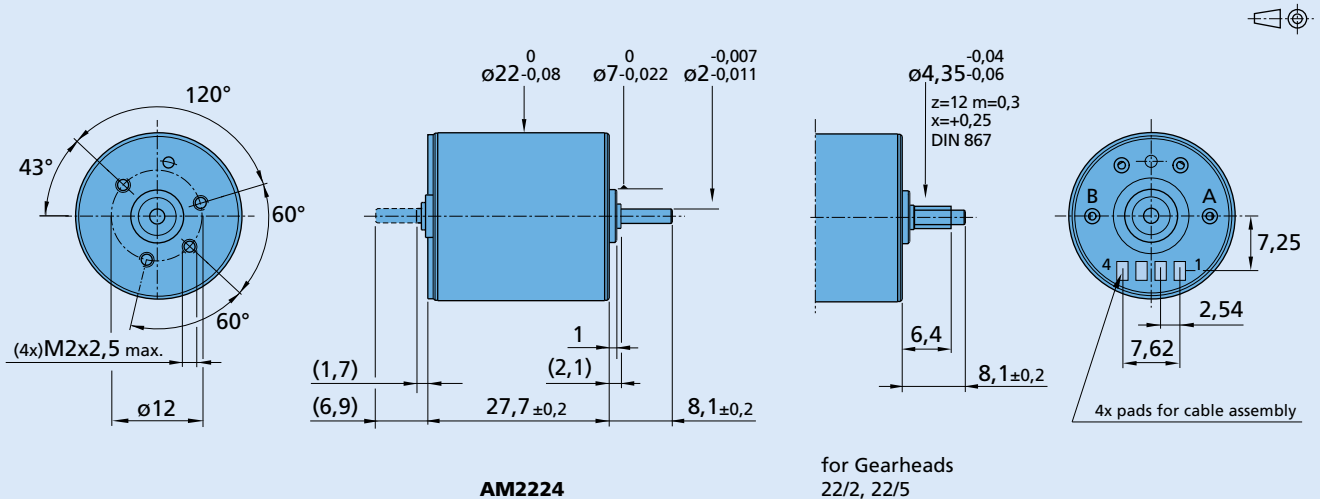
* Current limited to its nominal value



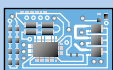
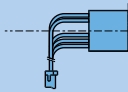
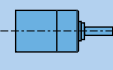
	CW CCW			
	1	2	3	4
Phase A	+	–	–	+
Phase B	+	+	–	–



Dimensional drawing



Combinations

Drive Electronics	Encoders	Cables	Gearheads / Lead screws
			
MCST3601	PE 22-120	List available on request	22E 22EKV 22/2 22/5* 22/7 23/1

* Zero Backlash Gearheads

Ordering information

Example: **AM2224-2R-AV-18-10**

Motor type	Bearings (rr)	Winding (vvv)	Motor execution (ee)		
AM = Motor design 22 = Motor diameter (mm) 24 = Steps per revolution	Special lubricant options available		Only front output shaft	With double output shaft	Front output shaft
AM2224	- (sleeve bearings) -2R (2 ball bearings)	-AV-0,9 -AV-4,8 -AV-18 -V-12-75	-10 -12 -14	-11 -13 -15 -16 -17 -18	Plain shaft, L=8,1 mm ø2 mm for 22/7, 23/1 Plain shaft, L=6,6 mm ø1,5 for 22E, 22EKV Pinion 22/2, 22/5 Plain shaft for 22/7, 23/1, encoder PE22-120 Plain shaft for 22E, encoder PE22-120 Pinion 22/2, 22/5, encoder PE22-120