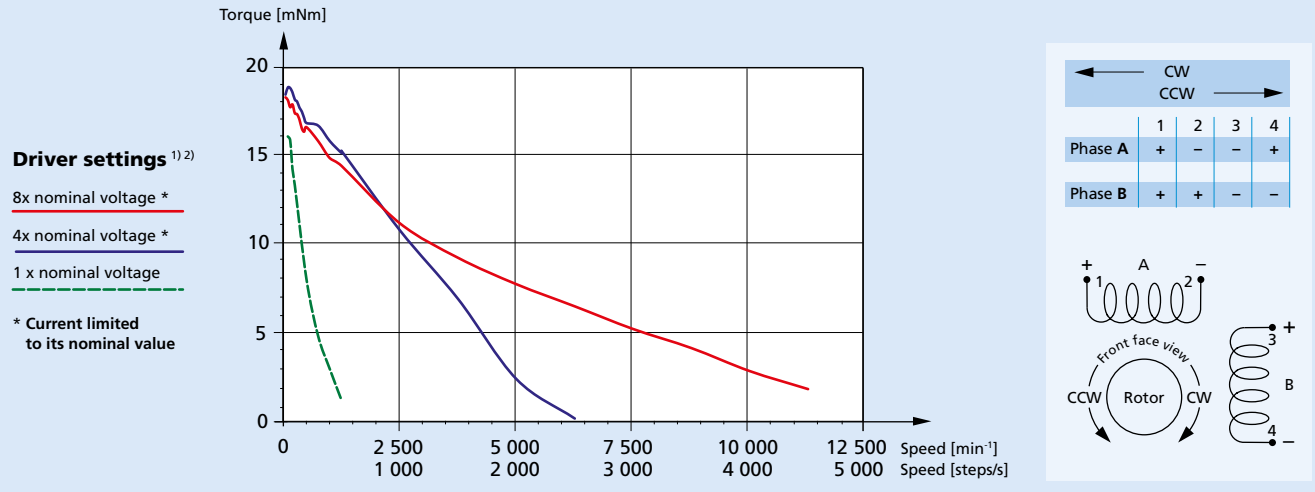
# Stepper Motors 22 mNm

Two phase, 24 steps per revolution
PRECIstep® Technology

## AM2224-R3-ww-ee

| | | ww = | AV-0,9 | | AV-4,8 | | AV-18 | | V-12-75 | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Current | Voltage | Current | Voltage | Current | Voltage | Current | Voltage | Drive mode |
| 1 | Nominal current per phase (both phases ON) [1] | | 1,0 | – | 0,5 | – | 0,25 | – | 0,125 | – | A |
| 2 | Nominal voltage per phase (both phases ON) [1] | | – | 1,4 | – | 3 | – | 6 | – | 12 | V DC |
| 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 | | | | | | | | $\cdot 10^{-9}$ kgm$^2$ |
| 12 | Resonance frequency (at no load) | | 100 | | | | | | | | Hz |
| 13 | Electrical time constant | | 0,92 | | | | | | | | ms |
| 14 | Ambient temperature range | | –35 ... +70 | | | | | | | | °C |
| 15 | Winding temperature tolerated, max. | | 130 | | | | | | | | °C |
| 16 | Thermal resistance | $R_{th1}$ / $R_{th2}$ | 4,8 / 20,4 | | | | | | | | °C/W |
| 17 | Thermal time constant | $\tau_{w1}$ / $\tau_{w2}$ | 10 / 620 | | | | | | | | s |
| 18 | Shaft bearings | | ball bearings, preloaded (standard with 3 mm shaft) | | | | | | | | |
| 19 | Shaft load, max.: | | | | | | | | | | |
| | – radial (3 mm from bearing) | | 20,0 | | | | | | | | N |
| | – axial | | 4,0 | | | | | | | | N |
| 20 | Shaft play, max.: | | | | | | | | | | |
| | – radial (0,2N) | | 15 | | | | | | | | µm |
| | – axial (0,2N) | | ~0 | | | | | | | | µm |
| 21 | Mass | | 50,5 | | | | | | | | 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 $\cdot 10^{-9}$ kgm$^2$, in half-step mode for the "1 x nominal voltage" curve, in 1/4 micro-stepping mode for the other curves.




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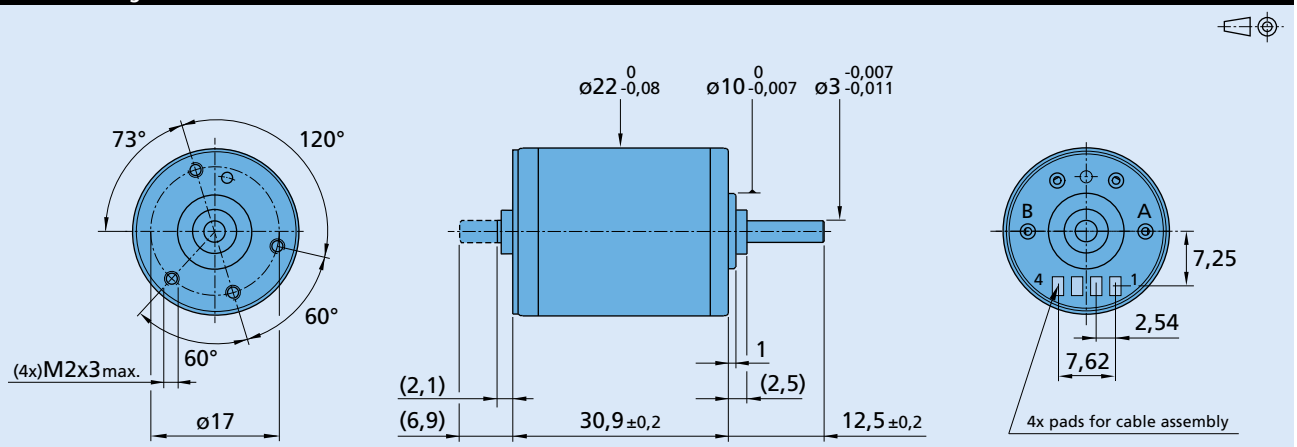
## Dimensional drawing




**AM2224-R3**

## Combinations

| Drive Electronics | Encoders | Kabel | Gearheads / Lead screws |
|---|---|---|---|
| **MCST3601** | **PE22-120** | List available on request | **26/1(S)**<br>Lead screws **M3** |

## Ordering information

Example: **AM2224-R3-AV-18-31**

| **Motor type**<br>AM = Motor design<br>22 = Motor diameter (mm)<br>24 = Steps per revolution | **Bearings** (rr)<br>Special lubricant options available | **Winding** (ww) | **Motor execution** (ee)<br>Only front output shaft | With double output shaft | Front output shaft |
|---|---|---|---|---|---|
| **AM2224** | **-R3** (2 ball bearings) | **-AV-0,9** | **-30** | **-31** | Plain shaft for 26/1(S) |
| | | **-AV-4,8** | **-85** | **-84** | Plain shaft for lead screw M3 |
| | | **-AV-18** | | **-36** | Plain shaft for encoder PE22-120 |
| | | **-V-12-75** | | **-86** | Plain shaft for lead screw M3, PE22-120 |