

DC-Micromotors

Graphite Commutation

125 mNm
77,8 W

Series 3272 ... CR

| Values at 22°C and nominal voltage | 3272 G | 012 CR | 018 CR | 024 CR | 036 CR | 048 CR | | | |
|--|---------------------|----------------------|--------|--------|--------|--------|--------|------------------------------|----|
| Nominal voltage | U_N | | 12 | 18 | 24 | 36 | 48 | V | |
| Terminal resistance | R | | 0,205 | 0,418 | 0,82 | 1,67 | 3,35 | Ω | |
| Rotor inductance | L | | 46,2 | 92,7 | 185 | 371 | 739 | μH | |
| Efficiency, max. | η_{max} | | 85 | 87 | 87 | 88 | 88 | % | |
| No-load current, typ. | I_0 | | 0,192 | 0,135 | 0,0958 | 0,0695 | 0,0479 | A | |
| No-load speed | n_0 | | 5 370 | 5 780 | 5 490 | 5 870 | 5 550 | min^{-1} | |
| Stall torque | M_H | | 1 160 | 1 230 | 1 190 | 1 250 | 1 180 | mNm | |
| Rotor inertia | J | | 67 | 60 | 63 | 62 | 60 | gcm^2 | |
| Friction torque | M_R | | 3,9 | 3,9 | 3,9 | 4 | 3,9 | mNm | |
| Torque constant | k_M | | 20,8 | 29,5 | 41,6 | 59 | 83,3 | mNm/A | |
| Speed constant | k_n | | 459 | 324 | 229 | 162 | 115 | min^{-1}/V | |
| Slope of n-M curve | $\Delta n/\Delta M$ | | 4,52 | 4,59 | 4,52 | 4,59 | 4,61 | $\text{min}^{-1}/\text{mNm}$ | |
| Thermal resistance: | | | | | | | | | |
| - winding to housing | R_{th1} | 2,9 | | | | | | K/W | |
| - housing to ambient (external plastic flange) | R_{th2p} | 8,6 | | | | | | K/W | |
| - housing to ambient (external metal flange) | R_{th2m} | 1,6 | | | | | | K/W | |
| Thermal time constant: | | | | | | | | | |
| - winding | τ_{w1} | 50 | | | | | | s | |
| - housing (external plastic flange) | τ_{w2p} | 1 100 | | | | | | s | |
| - housing (external metal flange) | τ_{w2m} | 200 | | | | | | s | |
| Operating temperature range: | | | | | | | | | |
| - motor | | -30 ... +125 | | | | | | $^{\circ}\text{C}$ | |
| - winding, max. permissible | | +155 | | | | | | $^{\circ}\text{C}$ | |
| Shaft bearings | | | | | | | | ball bearings, preloaded | |
| Shaft diameter | | | | | | | | 5 | mm |
| Radial shaft load max.: | | | | | | | | | |
| - dynamic at 3 000 min^{-1} (3 mm from bearing) | | 50 | | | | | | N | |
| Axial shaft load max.: | | | | | | | | | |
| - dynamic at 3 000 min^{-1} | | 5 | | | | | | N | |
| - static (shaft unsupported) | | 50 | | | | | | N | |
| - static (shaft supported) | | 2 000 | | | | | | N | |
| Shaft play, max.: | | | | | | | | | |
| - radial | | 0,015 | | | | | | mm | |
| - axial | | 0 | | | | | | mm | |
| Speed up to | n_{max} | 6 000 | | | | | | min^{-1} | |
| Number of pole pairs | | 1 | | | | | | | |
| Mass | | 312 | | | | | | g | |
| Housing material | | steel, nickel plated | | | | | | | |
| Magnet material | | NdFeB | | | | | | | |

Rated values for continuous operation

| | | | | | | | | |
|-------------------------------|-------|--|-------|-------|-------|-------|-------|-------------------|
| Rated torque | M_N | | 75,2 | 103 | 124 | 124 | 125 | mNm |
| Rated current (thermal limit) | I_N | | 4 | 4 | 3,6 | 2,53 | 1,81 | A |
| Rated speed | n_N | | 5 090 | 5 440 | 5 110 | 5 510 | 5 140 | min^{-1} |

Note: Rated values are calculated with nominal voltage and at a 22°C ambient temperature. The R_{th2p} value has been reduced by 50%.

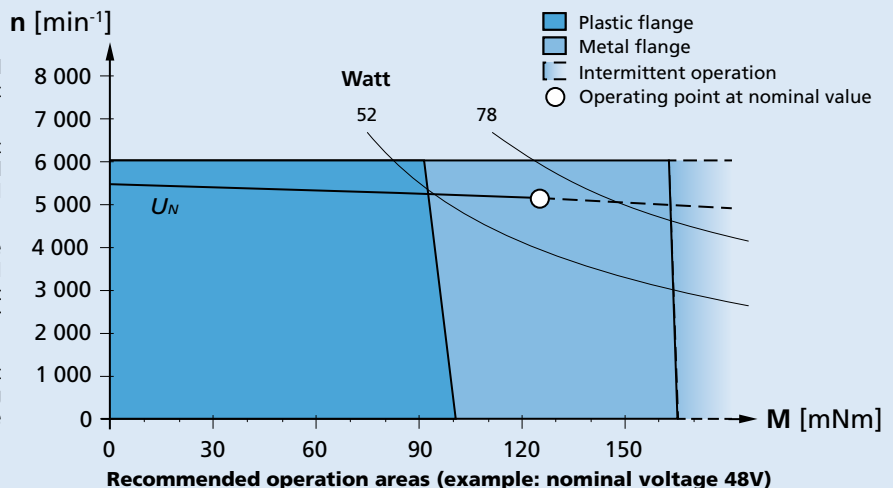
Note:

The diagram indicates the recommended speed in relation to the available torque at the output shaft for a given ambient temperature of 22°C.

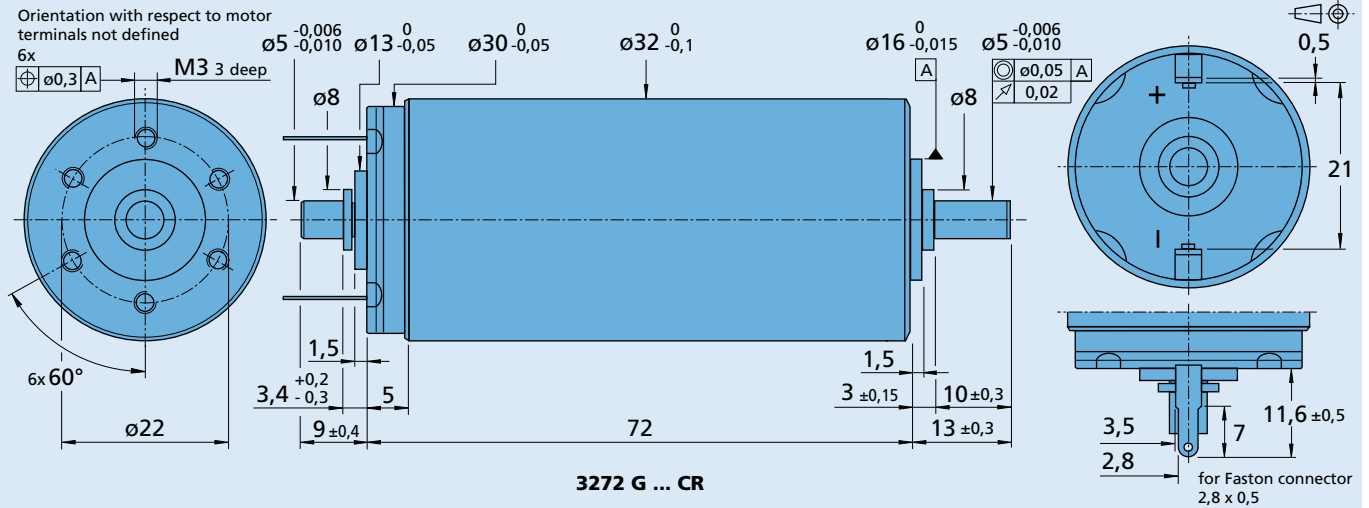
The diagram shows the motor in different conditions of thermal coupling, i.e. mounted respectively on a plastic flange and a metal flange.

The nominal voltage (U_N) curve shows, up to the thermal limit, the operating point at nominal voltage for the motor mounted on a plastic flange. Higher torque can be achieved by further reducing the thermal resistance.

Any points of operation above the curve at nominal voltage will require a higher operating voltage. Any points below the nominal voltage curve will require less voltage.



Dimensional drawing



Options

Example product designation: **3272G012CR-158**

| Option | Type | Description |
|--------|--------------|---|
| U | Single Leads | For motors with single leads (PTFE), length 160 mm, red (+) / black (-) |
| 158 | Shaft end | No second shaft end |
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Product combination

| Precision Gearheads / Lead Screws | Encoders | Drive Electronics | Cables / Accessories |
|-----------------------------------|--------------|-------------------|---|
| 32GPT | IE3-1024 | SC 2402 P | MBZ To view our large range of accessory parts, please refer to the "Accessories" chapter. |
| 32/3R | IE3-1024 L | SC 2804 S | |
| 38/1 | IER53-500 | SC 5004 P | |
| 38/1 S | IER53-500 L | SC 5008 S | |
| 38/2 | IER3-10000 | MC 5004 P | |
| 38/2 S | IER3-10000 L | MC 5005 S | |
| 42GPT | | MC 5010 S | |
| 32L ... TL | | | |
| 32L ... ML | | | |
| 32L ... SB | | | |
| 32L ... PB | | | |
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