Olimex MG-12V-1:100-DE and MG-12V-1:380-DE

12 V N20 metal gearmotors with dual-channel Hall encoder

All-metal precision gearbox

Dual-channel Hall encoder

100:1 and 380:1 reduction ratios

Product Parameters

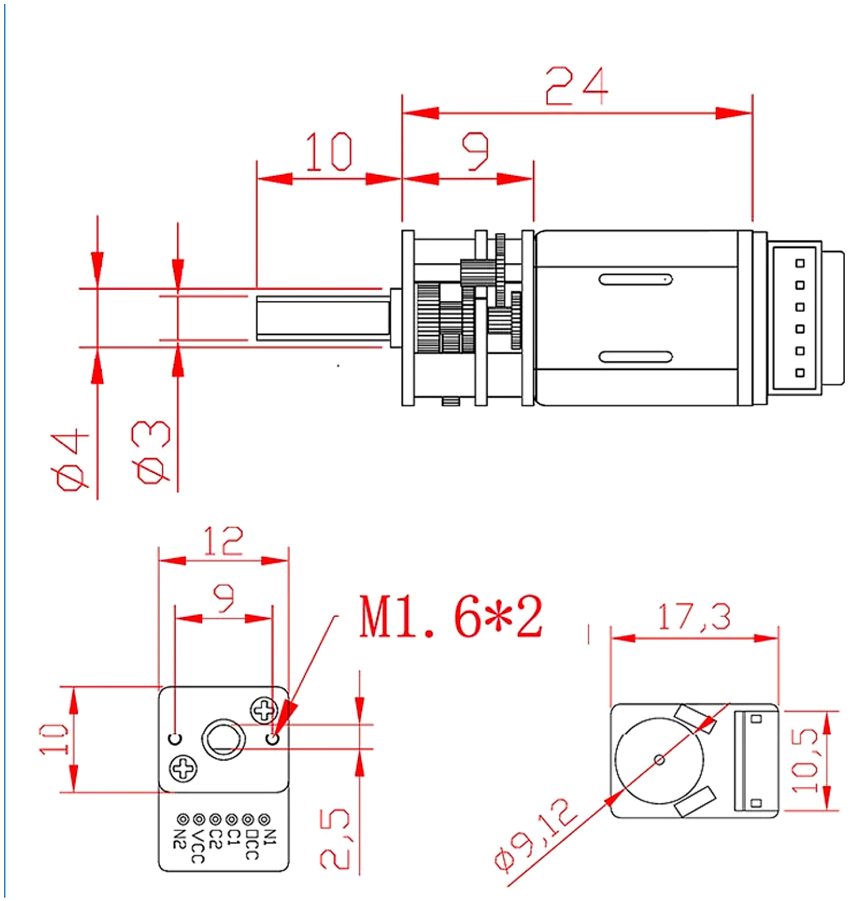
Model series: JGA12-N20					Product parameter table							
Model	Voltage		No-load		At maximum efficiency				Stall		Gear reducer	
Model	Using range (V)	Rated (V)	Speed (RPM)	Current (A)	Speed (r/min)	Current (mA)	Torque (kg·cm)	Power (W)	Torque (kg·cm)	Current (A)	Reduction ratio	Length (mm)
MG-12V-1:100-DE	3-12	6	330	0.075	120	155	2	0.35	1.75	0.9	100:1	9
MG-12V-1:380-DE	3-12	6	85	0.075	32	130	3	0.35	7.5	0.9	380:1	9

Common encoder characteristics

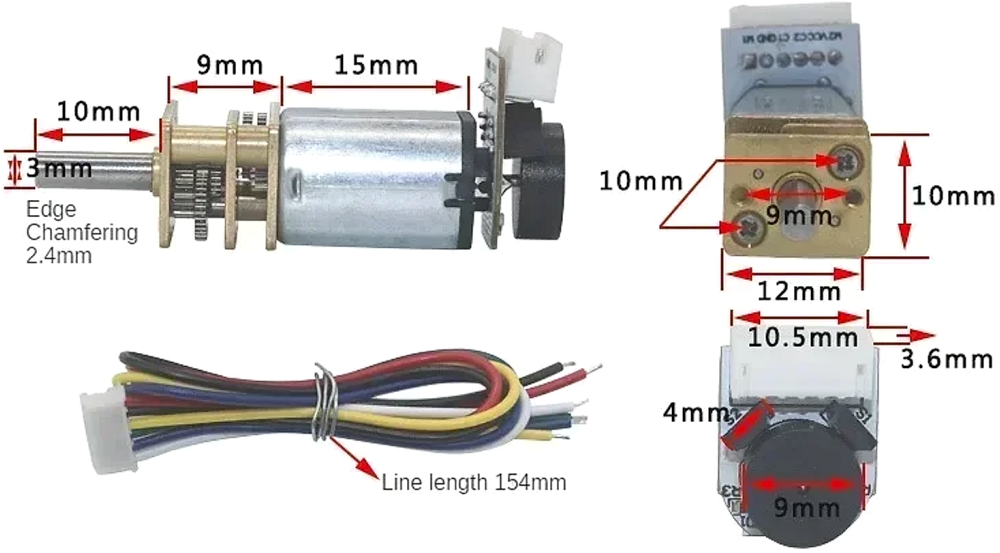
- **Output: square-wave A/B quadrature**
- Basic pulse count: 7 PPR at motor shaft
- **Encoder supply: 3.3-5 V**
- Operating temperature: -40 to +120 °C
- Hall response frequency: 100 kHz

Mechanical Dimensions

DIMENSIONED OUTLINE



MOTOR, GEARBOX AND CABLE DIMENSIONS



Encoder and Wiring

Encoder characteristics

Motor type: N20 DC gearmotor

Output: square-wave A/B quadrature

Encoder supply: 3.3-5 V

Hall response frequency: 100 kHz

Basic pulse count: 7 PPR at the motor shaft

Operating temperature: -40 to +120 °C

Six-pin connector

Pin	Wire	Function
1	**Red**	M1 - motor positive (+)
2	**Black**	Encoder supply +, 3.3-5 V
3	**Yellow**	Encoder A-phase output
4	**Green**	Encoder B-phase output
5	**Blue**	Encoder ground (GND)
6	**White**	M2 - motor negative (-)

Connection notes

Reversing the red and white motor leads reverses motor direction.

Do not reverse encoder supply and ground.

A/B relative phase indicates rotation direction.

Precautions for Use

1. **Confirm that the motor voltage is correct before use. For a DC supply, also confirm that the available current is sufficient.**

2. **Do not overload the motor. Load torque must not exceed rated torque, and axial or radial shaft force must remain within allowable limits. After loading, verify that measured current does not exceed rated current. Fit a fuse where appropriate to prevent overheating and motor damage.**

3. **Do not store or operate the motor in high-temperature, humid, or corrosive environments; these conditions can reduce motor performance and service life.**

4. **When fitting gears, pulleys, or other transmission parts to the shaft, do not strike or apply abnormal impact while pressing them into position.**

5. **When soldering the motor terminals, use a 340 ± 40 °C iron for no more than 3 seconds. Do not deform the terminal tabs. Prevent solder from flowing into the motor and avoid pulling or breaking the lead wires.**

6. **When mounting the motor, ensure that screws are not too long. Excessively long screws may press against and damage internal parts.**