

# Product Data Sheet

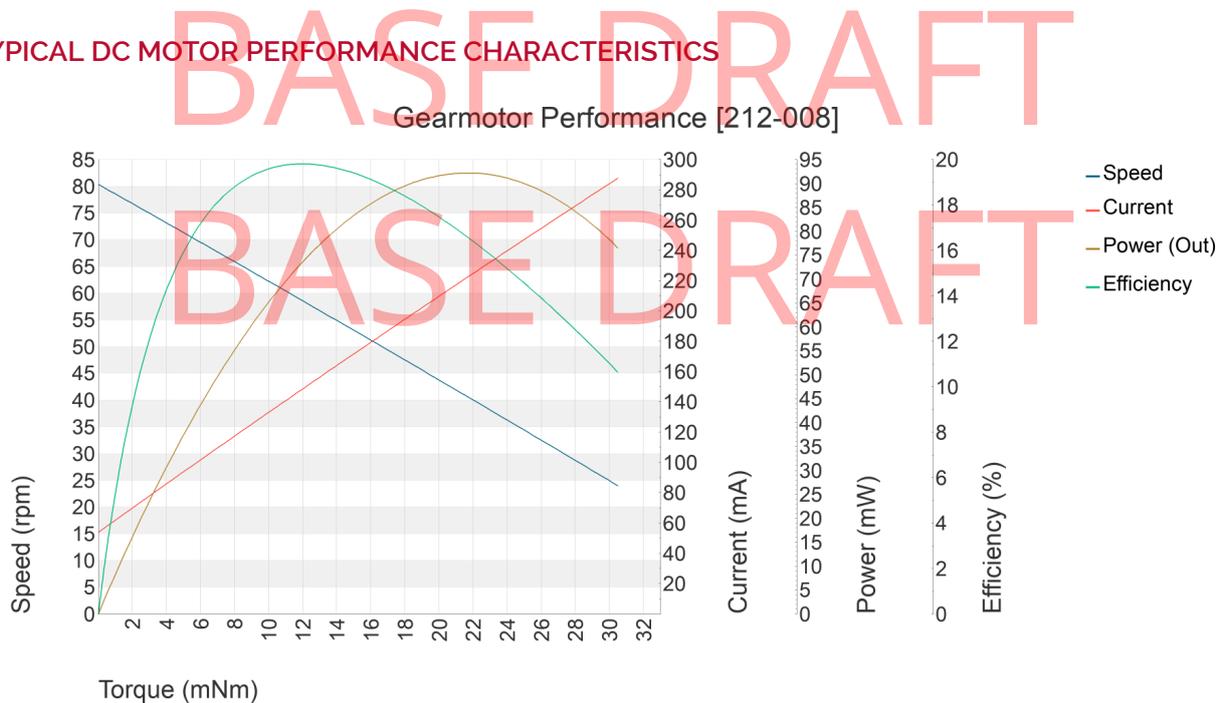
Range: Nano Planetary  
 Title: 12mm DC Gearmotor  
 Type: Undefined  
 Model: 212-008

12mm DC Gearmotor  
 22mm Type  
 Shown on 6mm Isometric Grid



KEY FEATURES	
Body Diameter	12 mm [± 0.2]
Body Length	22.15 mm [± 0.4]
Shaft Orientation	Inline
Gear Ratio	120.0 :1
Gearhead Type	Planetary
Rated Operating Voltage	2.5 V
Rated Load	20 mN·m
Rated Load Speed	44.6 rpm [± 8]
Typical Max. Output Power	94 mW

## TYPICAL DC MOTOR PERFORMANCE CHARACTERISTICS



## ORDERING INFORMATION

The model number fully defines the model, variant and additional features of the product. Please quote this number when ordering. For stocked types, testing and evaluation samples can be ordered directly through our online store.

**FIND OUT HOW THIS PART COULD MEET YOUR SPECIFICATIONS**

Email: [enquiries@precisionmicrodrives.com](mailto:enquiries@precisionmicrodrives.com)  
 Call: +44 (0) 1932 252482

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Precision Microdrives is an ISO 9001:2015 trusted designer and manufacturer of miniature, cost-effective, and well engineered motors and mechanisms. We are specialists in,

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### DESIGN FOR APPLICATION CASE STUDIES



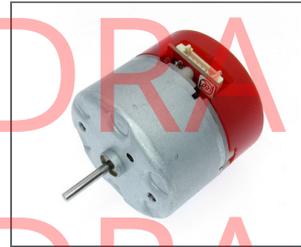
#### ENCAPSULATED VIBRATION MOTOR FOR A CPR TRAINING DUMMY

- Low volume, high value manufacturing
- Custom CNC machined enclosure
- Optimised haptic performance
- Custom PCB including EMI filters
- Part no. 334-401.001



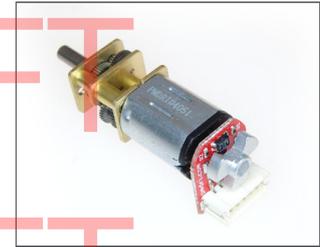
#### VIBRATION MOTOR HIGHLY OPTIMISED FOR RUGGEDISED FIRE AND POLICE EMERGENCY RADIOS

- High volume production
- Optimised for emergency services application
- Ruggedised design with custom rubber 'suspension' cover
- Custom PCB with spring legs for simplified production assembly times
- Part no. 308-104.001



#### PRECISION SPEED AND TORQUE CONTROLLED SERVO WITH INTEGRATED TUNABLE PID LOOP FOR SINGLE-USE SCIENTIFIC INSTRUMENT.

- Medium volume, high value assembly
- Proprietary PID controller converts cost-effective motor design into a precision servo
- Adapted control software including digital IO (to customer's specification)
- Part no. 132-100.001



#### CUSTOMISED PRECISION GEAR MOTOR WITH ROBUST OPTICAL ENCODER

- High volume production
- Application specific output shaft
- Tailored motor performance curves
- Rear motor shaft with noise resistant optical encoder
- Part no. 212-116.001

**PHYSICAL SPECIFICATION**

PARAMETER	CONDITIONS	SPECIFICATION
Body Diameter	Max body diameter or max face dimension where non-circular	12 mm [+/- 0.2]
Body Length	Excl. shafts, leads and terminals	22.15 mm [+/- 0.4]
Unit Weight		6.5 g
No. of Output Shafts		1
Shaft Diameter		4.5 mm [+/- 0.05]
Shaft Length	Measured from motor body face	3.8 mm [+/- 0.3]
Shaft Orientation		Inline

**CONSTRUCTION SPECIFICATION**

PARAMETER	CONDITIONS	SPECIFICATION
Motor Construction		Iron Core
Gear Ratio		120.0 :1
Gearhead Type		Planetary
Commutation		Precious Metal Brush
Rotation Direction	As viewed from the primary shaft end / or motor top	CW
No. of Poles		3
Bearing Type		Sintered Bronze

**OPERATIONAL SPECIFICATION**

PARAMETER	CONDITIONS	SPECIFICATION
Rated Operating Voltage		2.5 V
Rated Load	Maximum continuous torque	20 mN·m
Rated Load Speed	At rated voltage under fixed torque at rated load	44.6 rpm [+/- 8]
N/L Speed	Measured at rated voltage	80.5 rpm [+/- 9.7]
Max. Start Voltage	Certified starting voltage. Measured at no load, where applicable	1.2 V
Max. N/L Current	Measured at rated voltage	102 mA
Max. Operating Voltage		3 V
Max. Start Current	At rated voltage	540 mA
Max. Rated Load Current	At rated voltage under fixed torque at rated load	274 mA
Min. Insulation Resistance	At 50V DC between motor terminal and case	10 MOhm

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**Important:** The characteristics of the motor is the typical operating parameters of the product. The data herein offers design guidance information only and supplied batches are validated for conformity against the specifications on the previous page.

### TYPICAL PERFORMANCE CHARACTERISTICS

PARAMETER	CONDITIONS	SPECIFICATION
Typical Rated Load Power Consumption	At rated voltage and load	497 mW
Typical N/L Current	At rated voltage	54 mA
Typical Peak Efficiency		21.4 %
Typical Start Current	At rated voltage	439 mA
Typical Peak Eff. Torque		12.13 mN·m
Typical Peak Eff. Speed		59 rpm
Typical Peak Eff. Current		140 mA
Typical Peak Eff. Power Out	Power out at rated voltage at the peak efficiency torque point	75 mW
Typical Max. Output Power		94 mW
Typical Terminal Resistance		5.51 Ohm
Typical Terminal Inductance		970 uH

### TYPICAL DURABILITY CHARACTERISTICS

PARAMETER	CONDITIONS	SPECIFICATION
Typical Max. Mech. Noise		60 dB(A)

### ENVIRONMENTAL CHARACTERISTICS

PARAMETER	CONDITIONS	SPECIFICATION
Max. Operating Temp.		60 Deg.C
Min. Operating Temp.		-10 Deg.C
Max. Storage & Transportation Temp.		70 Deg.C
Min. Storage & Transportation Temp.		-20 Deg.C

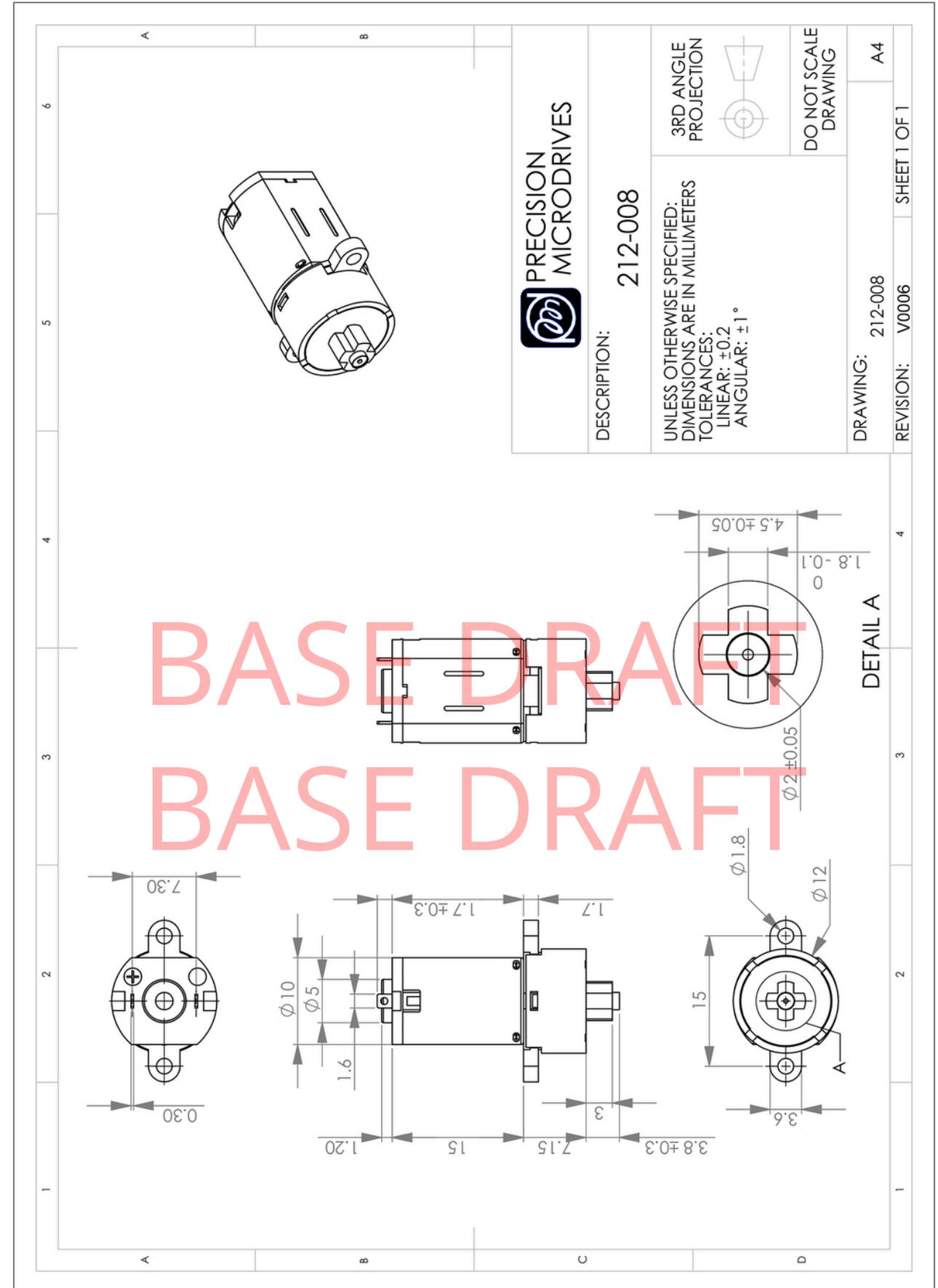
### TYPICAL PACKING CONDITIONS

PARAMETER	CONDITIONS	SPECIFICATION
Carton Type		Boxed Trays

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PRODUCT DIMENSIONAL SPECIFICATION



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### HOW TO ORDER

Call or email us with your order requirements at:

Email: [enquiries@precisionmicrodrives.com](mailto:enquiries@precisionmicrodrives.com)

Phone: **+44 (0) 1932 252482**

Please quote the full part number when ordering or making an enquiry. Some products can be ordered in smaller volumes directly from our website: [www.precisionmicrodrives.com](http://www.precisionmicrodrives.com)

### DATASHEET REVISION AND VERSION NUMBERING

We aim to provide our customer with the most detailed product information available. Sometimes changes are necessary, and these will be controlled by our engineering change request and notification process. To track datasheet versions we use both a 'production revision number' and a 'document version number'. These can be found at the bottom of every page. In some cases, such as documentation errors, the document version number can increase without triggering a product revision.

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1. Life support devices or systems are devices or systems which,
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  - 1.2. support or sustain life, and whose failure to perform when properly used in accordance with instructions for use provided in the labeling, can be reasonably expected to result in a significant injury to the user or a third party.
2. A critical component is any component of a life support device or any other system or machine whose failure to perform can be reasonably expected to cause the failure of the life support device or system, or to affect its safety or effectiveness.

### BATCH NUMBERING, MANUFACTURING, TRACEABILITY AND LABELLING

Every part manufactured by Precision Microdrives is at minimum identified and traced via a batch number. Where physically practical, we try to make each part with a batch number. In addition, some parts carry a lot code or barcode serial numbers. If traceability is a core requirement for your purchase, let us know and we'll outline the production options for you.

### STANDARD QUALITY CONTROLS AND ISO 9001

Precision quality control is one of our 3 key competitive advantages. All motors that we produce undergo 100% line inspection followed by strict and detailed batch sample testing in accordance with ISO 2859. All of the processes operated at Precision Microdrives are managed within our ISO 9001 quality system.



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