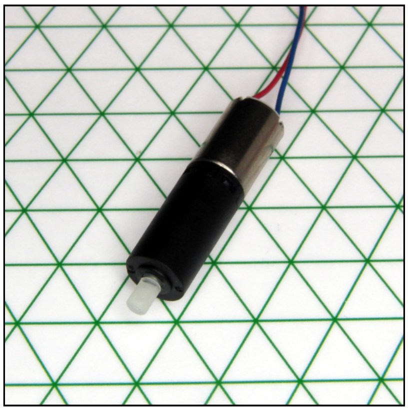


6mm DC Gearmotor - 21mm Type
Shown on 6mm Isometric Grid

PRECISION MICRODRIVES™

Product Data Sheet
Nano Planetary™
6mm DC Gearmotor - 21mm Type

Model: 206-10C

Ordering Information

The model number 206-10C 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.

Datasheet Versions

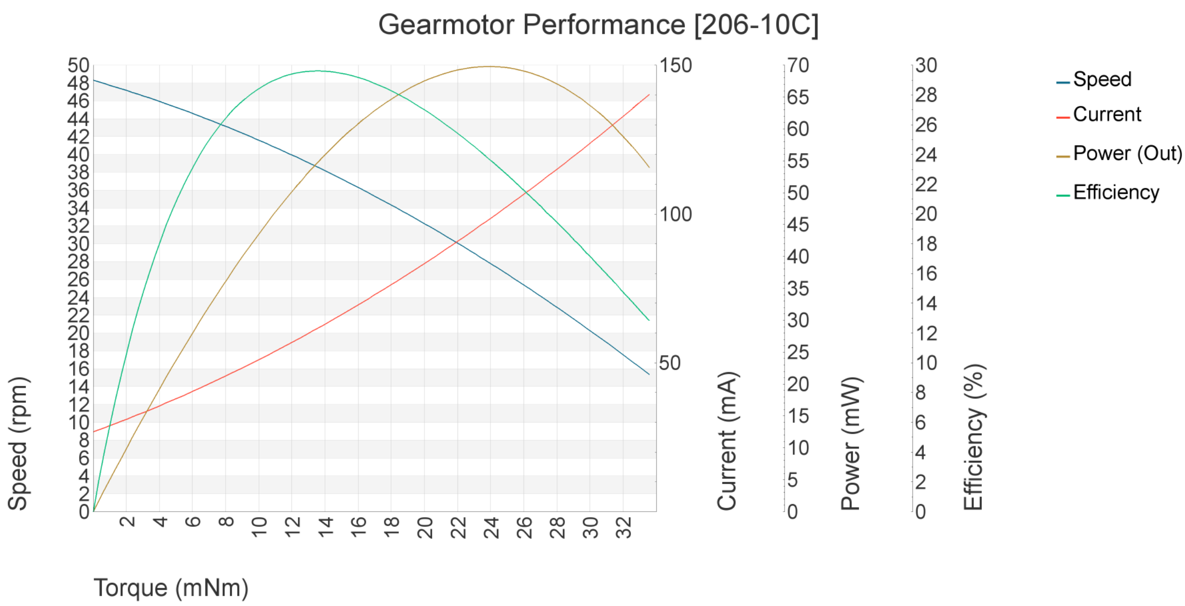
It is our intention to provide our customers with the best information available to ensure the successful integration between our products and your application. Therefore, our publications will be updated and enhanced as improvements to the data and product updates are introduced.
To obtain the most up-to-date version of this datasheet, please visit our website at:
www.precisionmicrodrives.com
The version number of this datasheet can be found on the bottom left hand corner of any page of the datasheet and is referenced with an ascending R-number (e.g. R002 is newer than R001). Please contact us if you require a copy of the engineering change notice between revisions.

If you have any questions, suggestions or comments regarding this publication or need technical assistance, please contact us via email at:
enquiries@precisionmicrodrives.com or call us on +44 (0) 1932 252 482

Key Features

Body Diameter:	6 mm [+/- 0.1]
Body Length:	20.8 mm [+/- 0.2]
Shaft Orientation:	Inline
Gear Ratio:	699.5 :1
Gearhead Type:	Planetary
Rated Operating Voltage:	3 V
Rated Load:	10 mNm
Rated Load Speed:	37 rpm
Typical Max. Output Power:	60 mW

Typical DC Gearmotor Performance Characteristics



Understanding Precision Microdrives Specification and Production Stages

Precision Microdrives Specification Stages

Precision Microdrives is run on processes and we guide all customers through sets of predefined specification stages as they move from prototype to production. These are designed to allow the flexibility to iterate designs with the eventual certainty required for production parts.

Base	Sampling	Pre-Production	Production	EOL
Used for factory downselection Typically 0 units	Used for validating prototypes Typically ~ 10 units	Used for validating initial production Typically ~ 1k units	Used for validating mass production Typically >5k+ units	Used as basis for product replacement 'Base' spec Typically 0 units

Precision Microdrives Capabilities and Competences

Precision Motor Testing and Motor Testing Services

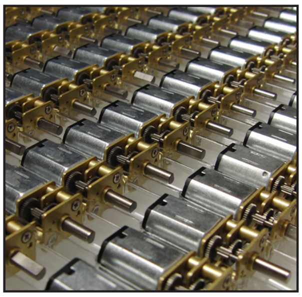
When we started PMD there were no commercial testing machines available, so we built our own. Ever since we've continued to develop new motor testing machines & procedures each year. Fast forward to today and we now have the most extensive testing facilities in the world for sub 40mm diameter motors, gear motors and vibration motors. These are used to validate motors through specification stages and during manufacturing. We also test motors as a service, provide easy to read reports and assist customers with their interpretation.

Motor Customisation, Design, and Manufacturing

To be useful motors need to be integrated with other parts, such as housings or couplings . We routinely develop and produce complete assemblies, from motors with customised leads or connectors to complete electromechanical mechanisms and integrated control electronics. We will support and guide you through the specification stages from prototype to signing-off for mass production.

Competent and Dependable Supply Chains for Production

Most of the worlds miniature motors are made in Asia, and you need engineers on the factory floor who can maintain the Western values of "doing things right" whilst supporting the Asian values of "getting things done". As a customer you are supported by expert eyes, right at the heart of the manufacturing process where it is needed: On the ground in the UK, Hong Kong, and China.



Quality Engineers on the Ground and Local Engineering Teams

The nature of our business is to confidently produce and supply motors 'On time & To spec'. Our customers benefit from our certified ISO 9001 quality systems, reliable motor production infrastructure, and experience. We have a core competence in helping customers design out over-specified and expensive European drives, with more cost-effective, adequately specified, and verified Asian alternatives.

Physical Specification

PARAMETER	CONDITIONS	SPECIFICATION
Body Diameter	Max body diameter or max face dimension where non-circular	6 mm [+/- 0.1]
Body Length	Excl. shafts, leads and terminals	20.8 mm [+/- 0.2]
Unit Weight		1.2 g
No. of Output Shafts		1
Shaft Diameter		2 mm [+ 0 /- 0.05]
Shaft Orientation		Inline
Shaft Length	Measured from motor body face	3.6 mm [+/- 0.2]

Construction Specification

PARAMETER	CONDITIONS	SPECIFICATION
Motor Construction		Coreless
Gear Ratio		699.5 :1
Gearhead Type	Metal planet gears on last stage	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

Leads & Connectors Specification

PARAMETER	CONDITIONS	SPECIFICATION
Lead Length	Lead lengths defined as total length or between motor and connector	100 mm [+/- 5]
Lead Strip Length		1.5 mm [+/- 0.5]
Lead Wire Gauge		32 AWG
Lead Configuration		Straight

Operational Specification

PARAMETER	CONDITIONS	SPECIFICATION
Rated Operating Voltage		3 V
Rated Load	Maximum continuous torque	10 mNm
Rated Load Speed	At rated voltage under fixed torque at rated load	37 rpm
N/L Speed	Measured at rated voltage	47 rpm [+/- 9]
Max. Start Voltage	Measured at no load	2 V
Max. N/L Current	Measured at rated voltage	42 mA
Max. Operating Voltage		4 V
Max. Stall Current	Momentary stall condition current at rated voltage	235 mA
Max. Start Current	At rated voltage	235 mA
Max. Rated Load Current	At rated voltage under fixed torque at rated load	95 mA
Max. Intermittent Torque		25 mNm
Min. Insulation Resistance	At 50V DC between motor terminal and case	1 MOhm

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	165 mW
Typical N/L Current	At rated voltage	32 mA
Typical Peak Efficiency		25.4 %
Typical Start Current	At rated voltage	185 mA
Typical Peak Eff. Torque		13.5 mN·m
Typical Peak Eff. Speed		35 rpm
Typical Peak Eff. Current		65 mA
Typical Peak Eff. Power Out	Power out at rated voltage at the peak efficiency torque point	49 mW
Typical Max. Output Power		60 mW
Typical Terminal Resistance		14 Ohm
Typical Terminal Inductance		75 uH

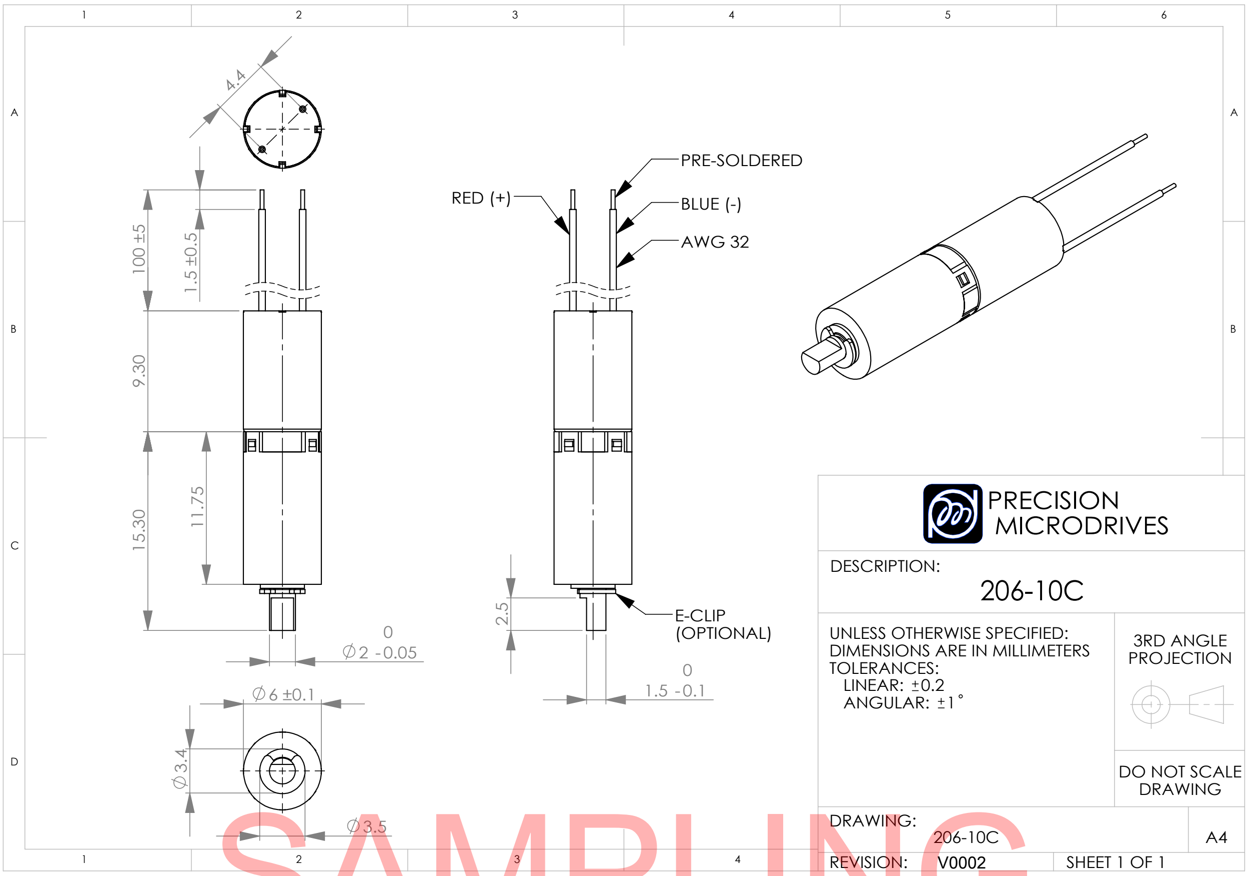
Environmental Characteristics

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

Product Dimensional Specification



Life Support Policy

PRECISION MICRODRIVES PRODUCTS ARE NOT AUTHORISED FOR USE AS CRITICAL COMPONENTS IN LIFE SUPPORT DEVICES OR SYSTEMS WITHOUT THE EXPRESS WRITTEN APPROVAL OF PRECISION MICRODRIVES LIMITED.
As used herein:

1. Life support devices or systems are devices or systems which, (a) are intended for surgical implant into the body, or (b) 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.

2. A critical component is any component of a life support device or system 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.

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VAT Registration.