DINGS'

Precision Motion Specialist

PRECISION PLANETARY GEARBOX

PRODUCT CATALOG

Jiangsu DINGS' Intelligent Control Technology Co., Ltd.

dingsmotion.com

Founded in 2008, Jiangsu DINGS' Intelligent Control Technology Co., Ltd. is guided by the philosophy, **"Quality stems from responsibility, and details determine success."**

As a global leader in precision linear motion, DINGS' delivers a comprehensive portfolio of precision stepper, DC and BLDC motors, voice coil motors, lead and ball screw linear actuators, PMSM motors for eco-mobility, and advanced motion controllers — setting new benchmarks in the global motion control market.

SCALE

300+	Advanced Machining Equipment	
40+	Automated Assembly Lines	
100+	Precision Testing & Analysis Systems	
140+	Patents & Intellectual Properties	

GROWTH

2008	Company Founded & DINGS' Brand Established
2010	DINGS' Motion USA Established
2016	DINGS' Korea Established
2019	Joined LEILI Group
2021	Changzhou Intelligent Manufacturing Plant Established Listed on China NEEQ Market
2022	Korea R&D Center Established
2023	Listed on Beijing Stock Exchange [Stock Code: 920593] DINGS' Korea Converted to Corporate Entity DINGS' Japan Established
2024	New Headquarters & Plant Established DINGS' Motion Europe Established
2025	Thailand Manufacturing Facility Established

CERTIFICATIONS

- ISO 9001 — Quality
- ISO 14001 — Environmental
- ISO 45001 — Health & Safety
- ISO 13485 — Medical Device Quality
- ISO/IEC 17025 — Laboratory Accreditation
- IATF16949 — Automotive Quality
- IPMS — Intellectual Property
- CE — Safety Standards
- RoHS COMPLIANT — Environmental Standards - RoHS
- REACH NPS — Environmental Standards - REACH

PRODUCT WARRANTY

Warranty period: 1 year from shipment.

Free repair is provided for defects in materials or workmanship under normal use.

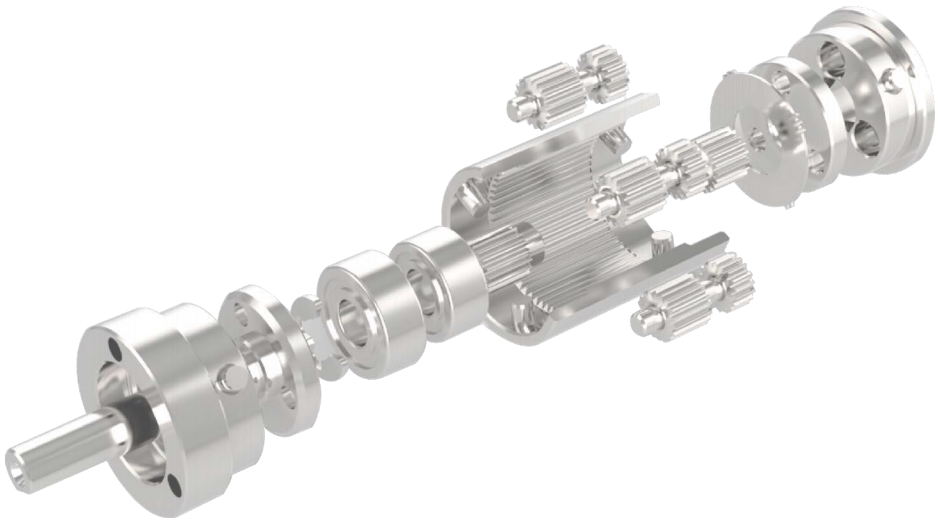
Warranty does not apply to:

- Warranty expiration or damaged/lost nameplates
- Improper installation or operating conditions
- Unauthorized disassembly or modification
- Repairs conducted outside of official service channels
- Force majeure, including natural disasters

DINGS' is committed to quality, reliability, and responsibility
— delivering high-performance motion solutions built on precision engineering.

Contents

Precision Planetary Gearbox



Technology Overview

Operating Principle

This product uses an NGW-type planetary gear mechanism with a fixed ring gear.

The sun gear receives high-speed rotational input while the ring gear remains stationary. Power is transmitted through the planetary carrier and delivered at a reduced speed. According to the selected reduction ratio, output speed is decreased and output torque is proportionally increased.

Application Fields

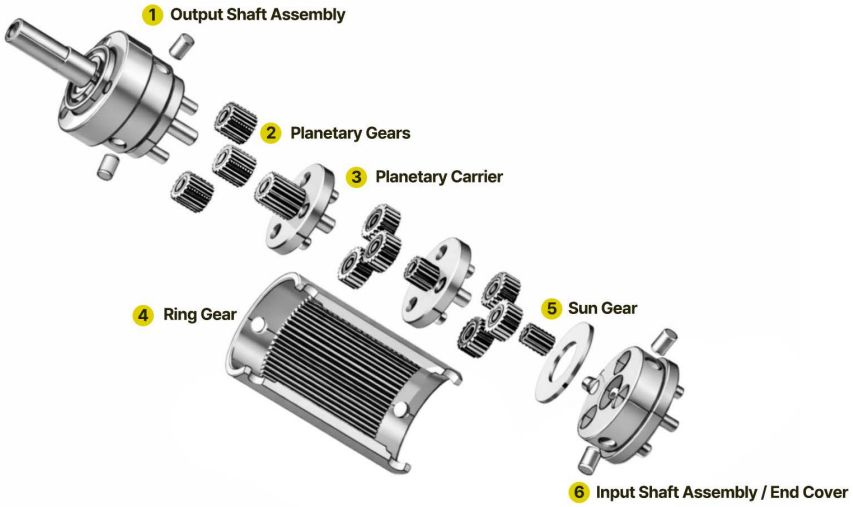
Precision planetary gear reducers feature compact size, high power density, a wide reduction ratio range, coaxial input and output shafts, and high efficiency. They are widely used in robotics, military equipment, medical devices, automotive components, small appliances, smart home systems, solar power generation, precision instruments, and automated machinery.

Product Features

1. **High load capacity**: The load is shared by multiple planetary gears, resulting in higher load capability and longer service life compared with conventional parallel-shaft gear systems.
2. **Compact structure**: The input and output shafts are coaxially arranged around the sun gear in a symmetric configuration. The small radial dimension enables high reduction ratios within limited installation space.
3. **Stable operation:** Multi-tooth meshing ensures smooth power transmission with low vibration and low noise.
4. **High efficiency:** For example, the 16 series achieves up to 90% efficiency in single-stage reduction and up to 80% in two-stage reduction.

Product Structure

Power is transmitted from the sun gear to the planetary gears. The planetary gears revolve around the sun gear while meshing with the fixed ring gear. Through this combined meshing and rotational motion, speed is reduced and torque is increased before being delivered to the output shaft.



Main Components and Functions

1. Output Shaft Assembly: The gearbox output section that transmits the reduced torque to the load.
2. Planetary Gears: Arranged around the sun gear and meshing with both the sun gear and the ring gear. They are supported by the planetary carrier and rotate during operation.
3. Planetary Carrier: Supports the planetary gears and causes them to revolve around the sun gear, while also serving as the medium that transmits output power.
4. Ring Gear: A fixed gear integrated with the housing, which meshes with the planetary gears to perform the speed reduction function.
5. Sun Gear: The central input gear that receives power from the motor and drives the planetary gear set.
6. Motor Interface Assembly: Comprises the motor connector, washers, and screws, serving as the interface that integrates the reducer with the motor.

6PGX

Main Specifications

Item	Specification
Housing material	Stainless steel
Gear type	Spur gear
Gear material	Steel
Output shaft material	Stainless steel
Output bearing	Ball bearing
Radial backlash (flange reference 5 mm)	≤ 0.04 mm
Axial backlash	≤ 0.1 mm
Max. radial load (flange reference 5 mm)	≤ 7 N
Max. axial load	≤ 5 N
Max. allowable installation force	≤ 5 N
Rotation direction	Same direction as input
Operating temperature range	-40 °C ~ +100 °C

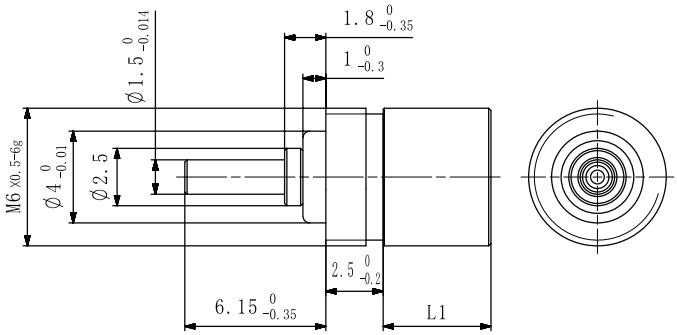
Technical Specifications

Item	Unit	Specification		
Number of gear stages	-	1	2	3
Reduction ratio	-	3.9	15	57
Gearbox backlash	°	1.8	2	2.2
Max. continuous output power	W	0.65	0.4	0.2
Max. peak output power	W	0.8	0.5	0.25
Max. continuous input speed	rpm	20000	20000	20000
Max. peak input speed	rpm	25000	25000	25000
Max. continuous torque	Nm	0.002	0.005	0.01
Max. peak torque	Nm	0.005	0.01	0.02
Max. efficiency	%	88	77	68
Gearbox weight	g	1.6	2	2.4
Gearbox length (L)	mm	4.7	7.2	9.7

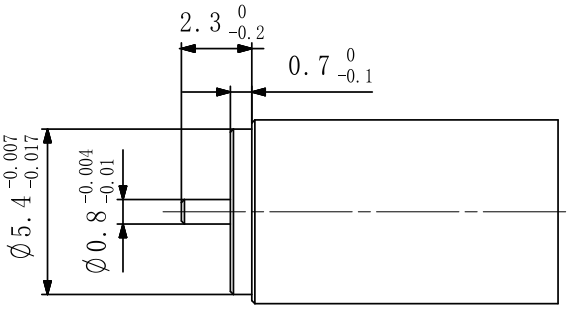
Motor Gear Specifications

1st Reduction ratio	Gear Teeth	Gear Thickness (mm)	Shaft Diameter (ΦD)	Material
3.9	14	2	$0.8^{+0.006}_{-0.002}$	Steel

Gearbox Dimensional Drawing



Motor Mounting Dimensions



8PGX

Main Specifications

Item	Specification
Housing material	Stainless steel
Gear type	Spur gear
Gear material	Steel
Output shaft material	Stainless steel
Output bearing	Ball bearing
Radial backlash (flange reference 5 mm)	≤ 0.04 mm
Axial backlash	≤ 0.1 mm
Max. radial load (flange reference 5 mm)	≤ 7 N
Max. axial load	≤ 5 N
Max. allowable installation force	≤ 5 N
Rotation direction	Same direction as input
Operating temperature range	-40 °C ~ +100 °C

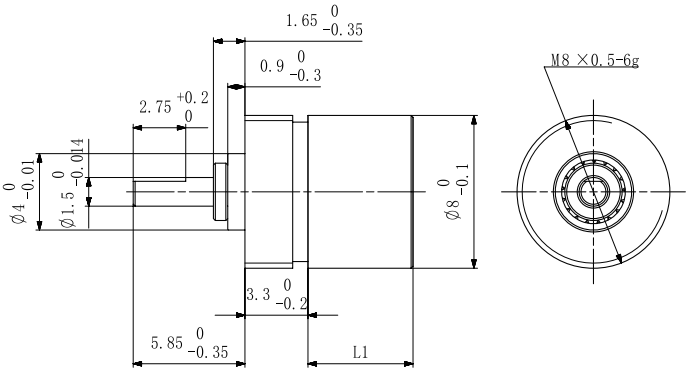
Technical Specifications

Item	Unit	Specification		
Number of gear stages	-	1	2	3
Reduction ratio	-	4	16	64
Gearbox backlash	°	1.8	2	2.2
Max. continuous output power	W	0.84	0.52	0.4
Max. peak output power	W	1.05	0.65	0.5
Max. continuous input speed	rpm	14000	14000	14000
Max. peak input speed	rpm	20000	20000	20000
Max. continuous torque	Nm	0.01	0.02	0.06
Max. peak torque	Nm	0.015	0.03	0.09
Max. efficiency	%	90	81	72
Gearbox weight	g	2.6	3.2	3.8
Gearbox length (L)	mm	5.5	8.1	10.7

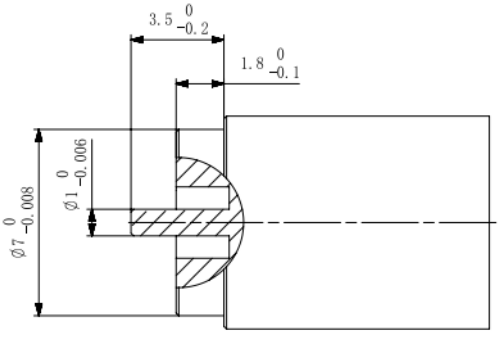
Motor Gear Specifications

1st Reduction ratio	Gear Teeth	Gear Thickness (mm)	Shaft Diameter (ΦD)	Material
4	15	2	$1^{+0.006}_{-0.002}$	Steel

Gearbox Dimensional Drawing



Motor Mounting Dimensions



10PGX

Main Specifications

Item	Specification
Housing material	Stainless steel
Gear type	Spur gear
Gear material	Steel
Output shaft material	Stainless steel
Output bearing	Ball bearing
Radial backlash (flange reference 5 mm)	≤ 0.04 mm
Axial backlash	≤ 0.1 mm
Max. radial load (flange reference 5 mm)	≤ 15 N
Max. axial load	≤ 5 N
Max. allowable installation force	≤ 5 N
Rotation direction	Same direction as input
Operating temperature range	-40 °C ~ +100 °C

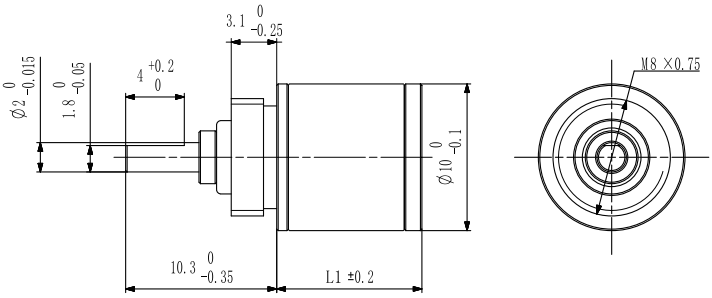
Technical Specifications

Item	Unit	Specification			
Number of gear stages	-	1	2	3	4
Reduction ratio	-	4.25	18	77	326
Gearbox backlash	°	1.5	1.8	2.0	2.2
Max. continuous output power	W	1.6	1.2	1	0.4
Max. peak output power	W	2	1.5	1.3	0.5
Max. continuous input speed	rpm	14000	14000	14000	14000
Max. peak input speed	rpm	18000	18000	18000	18000
Max. continuous torque	Nm	0.01	0.03	0.1	0.15
Max. peak torque	Nm	0.02	0.05	0.15	0.2
Max. efficiency	%	90	81	73	65
Gearbox weight	g	6.8	7.3	7.8	8.3
Gearbox length (L)	mm	10.1	13.6	17.1	20.6

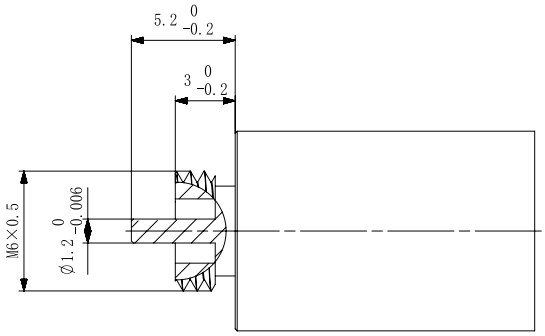
Motor Gear Specifications

1st Reduction ratio	Gear Teeth	Gear Thickness (mm)	Shaft Diameter (ΦD)	Material
4.25	12	2.5	$1.2^{-0.012}_{-0.022}$	Steel

Gearbox Dimensional Drawing



Motor Mounting Dimensions



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Main Specifications

Item	Specification
Housing material	Stainless steel
Gear type	Spur gear
Gear material	Steel
Output shaft material	Stainless steel
Output bearing	Ball bearing
Radial backlash (flange reference 5 mm)	≤ 0.04 mm
Axial backlash	≤ 0.1 mm
Max. radial load (flange reference 5 mm)	≤ 50 N
Max. axial load	≤ 20 N
Max. allowable installation force	≤ 30 N
Rotation direction	Same direction as input
Operating temperature range	-40 °C ~ +100 °C

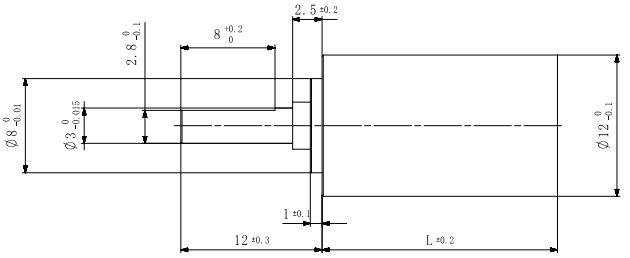
Technical Specifications

Item	Unit	Specification			
Number of gear stages	-	1	2	3	4
Reduction ratio	-	4.3	18.4	79	337
Gearbox backlash	°	1.2	1.5	1.8	2.1
Max. continuous output power	W	2	1	0.5	0.25
Max. peak output power	W	2.5	1.25	0.65	0.3
Max. continuous input speed	rpm	16000	16000	16000	16000
Max. peak input speed	rpm	20000	20000	20000	20000
Max. continuous torque	Nm	0.08	0.11	0.14	0.17
Max. peak torque	Nm	0.10	0.14	0.18	0.21
Max. efficiency	%	90	80	75	65
Gearbox weight	g	9	12	15	18
Gearbox length (L)	mm	11.3	15.1	18.9	22.7

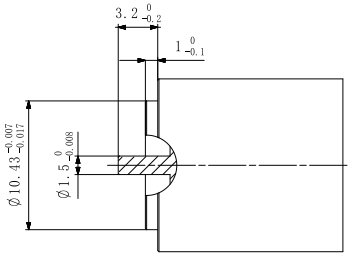
Motor Gear Specifications

1st Reduction ratio	Gear Teeth	Gear Thickness (mm)	Shaft Diameter (ΦD)	Material
4.3	14	3	$1.5\ ^{-0.012}_{-0.022}$	Steel

Gearbox Dimensional Drawing



Motor Mounting Dimensions



14PGX

Main Specifications

Item	Specification
Housing material	Stainless steel
Gear type	Spur gear
Gear material	Steel
Output shaft material	Stainless steel
Output bearing	Ball bearing
Radial backlash (flange reference 5 mm)	≤ 0.04 mm
Axial backlash	≤ 0.1 mm
Max. radial load (flange reference 5 mm)	≤ 60 N
Max. axial load	≤ 20 N
Max. allowable installation force	≤ 20 N
Rotation direction	Same direction as input
Operating temperature range	-40 °C ~ +100 °C

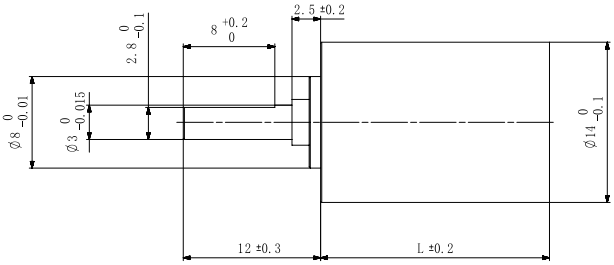
Technical Specifications

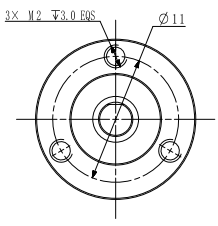
Item	Unit	Specification			
Number of gear stages	-	1	2	3	4
Reduction ratio	-	4.3	18.4	79	337
Gearbox backlash	°	1.1	1.3	1.45	1.7
Max. continuous output power	W	4	2	1	0.4
Max. peak output power	W	5	2.5	1.25	0.5
Max. continuous input speed	rpm	14000	16000	16000	16000
Max. peak input speed	rpm	18000	20000	20000	20000
Max. continuous torque	Nm	0.16	0.2	0.25	0.3
Max. peak torque	Nm	0.2	0.25	0.31	0.38
Max. efficiency	%	90	80	75	65
Gearbox weight	g	11	15	19	23
Gearbox length (L)	mm	11.8	16.1	20.4	24.7

Motor Gear Specifications

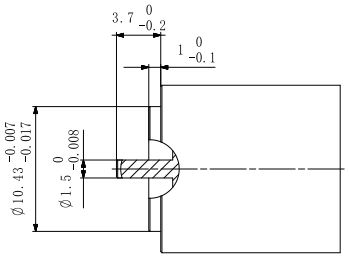
1st Reduction ratio	Gear Teeth	Gear Thickness (mm)	Shaft Diameter (ΦD)	Material
4.3	14	2.5	$1.5\ ^{-0.012}_{-0.022}$	Steel

Gearbox Dimensional Drawing





Motor Mounting Dimensions



16PGX

Main Specifications

Item	Specification
Housing material	Stainless steel
Gear type	Spur gear
Gear material	Steel
Output shaft material	Stainless steel
Output bearing	Ball bearing
Radial backlash (flange reference 5 mm)	≤ 0.03 mm
Axial backlash	≤ 0.2 mm
Max. radial load (flange reference 5 mm)	≤ 70 N
Max. axial load	≤ 20 N
Max. allowable installation force	≤ 30 N
Rotation direction	Same direction as input
Operating temperature range	-40 °C ~ +100 °C

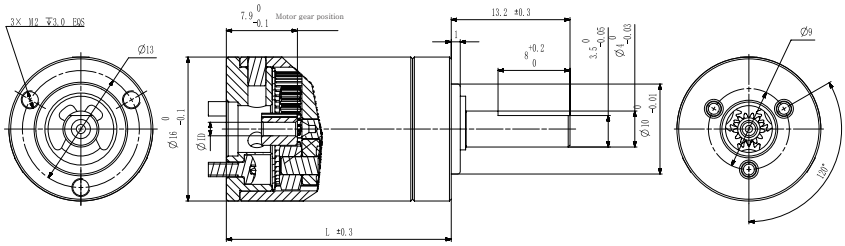
Technical Specifications

Item	Unit	Specification			
Number of gear stages	-	1	2	3	4
Reduction ratio	-	3.9,5.3	16,21,28	62,83,111,150	243,326,439,590,794
Gearbox backlash	°	1	1.2	1.3	1.4
Max. continuous output power	W	6.5	3.2	1.6	0.6
Max. peak output power	W	8	4	2	0.75
Max. continuous input speed	rpm	12000	14000	14000	14000
Max. peak input speed	rpm	15000	18000	18000	18000
Max. continuous torque	Nm	0.2	0.25	0.35	0.45
Max. peak torque	Nm	0.25	0.35	0.45	0.55
Max. efficiency	%	90	80	75	65
Gearbox weight	g	25	31	37	42
Gearbox length (L)	mm	18.7	25.5	30.2	35

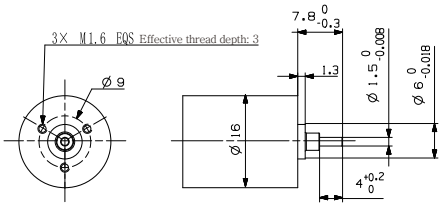
Motor Gear Specifications

1st Reduction ratio	Gear Teeth	Gear Thickness (mm)	Shaft Diameter (ΦD)	Material
3.947	19	4	$1.5\ ^{-0.012}_{-0.022}$	Steel
5.308	13	4	$1.5\ ^{-0.012}_{-0.022}$	Steel

Gearbox Dimensional Drawing



Motor Mounting Dimensions



22PGX

Main Specifications

Item	Specification
Housing material	Stainless steel
Gear type	Spur gear
Gear material	Steel
Output shaft material	Stainless steel
Output bearing	Ball bearing
Radial backlash (flange reference 10 mm)	≤ 0.03 mm
Axial backlash	≤ 0.2 mm
Max. radial load (flange reference 10 mm)	≤ 120 N
Max. axial load	≤ 40 N
Max. allowable installation force	≤ 50 N
Rotation direction	Same direction as input
Operating temperature range	-40 °C ~ +100 °C

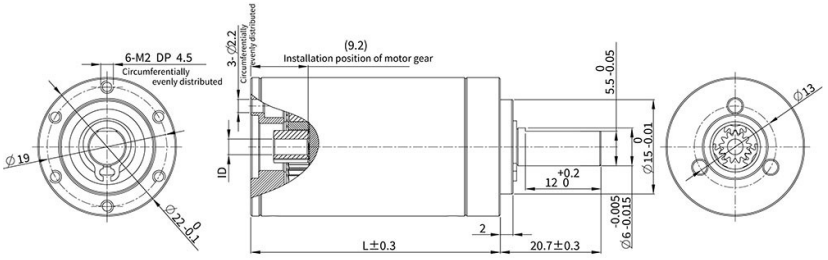
Technical Specifications

Item	Unit	Specification			
Number of gear stages	-	1	2	3	4
Reduction ratio	-	3.9,5.3	16,21,28	62,83,111,150	243,326,439,590,794
Gearbox backlash	°	0.85	1.05	1.2	1.35
Max. continuous output power	W	24	12	6	1.6
Max. peak output power	W	30	15	7.5	2
Max. continuous input speed	rpm	8000	10000	10000	10000
Max. peak input speed	rpm	10000	12500	12500	12500
Max. continuous torque	Nm	0.5	0.7	1.2	1.5
Max. peak torque	Nm	0.6	0.9	1.5	1.9
Max. efficiency	%	90	81	74	66
Gearbox weight	g	59	83	97	112
Gearbox length (L)	mm	22.3	33	39.6	46.3

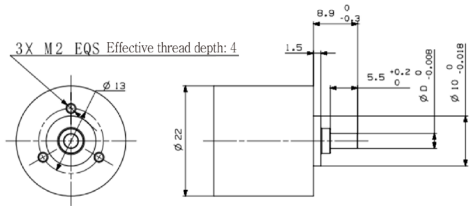
Motor Gear Specifications

1st Reduction ratio	Gear Teeth	Gear Thickness (mm)	Shaft Diameter (ΦD)	Material
3.947	19	5.5	$3^{-0.013}_{-0.023}$	Steel
5.308	13	5.5	$2.5^{-0.012}_{-0.022}$	Steel
6.6	10	5.5	$1.5^{-0.012}_{-0.022}$	Steel

Gearbox Dimensional Drawing



Motor Mounting Dimensions



28PGX

Main Specifications

Item	Specification
Housing material	Stainless steel
Gear type	Spur gear
Gear material	Steel
Output shaft material	Stainless steel
Output bearing	Ball bearing
Radial backlash (flange reference 10 mm)	≤ 0.03 mm
Axial backlash	≤ 0.2 mm
Max. radial load (flange reference 10 mm)	≤ 180 N
Max. axial load	≤ 110 N
Max. allowable installation force	≤ 150 N
Rotation direction	Same direction as input
Operating temperature range	-40 °C ~ +100 °C

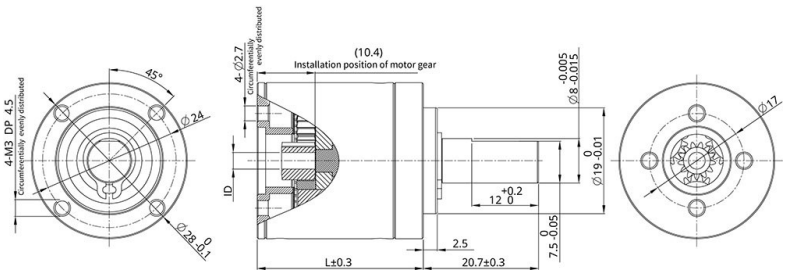
Technical Specifications

Item	Unit	Specification			
Number of gear stages	-	1	2	3	4
Reduction ratio	-	3.9,5.3	16,21,28	62,83,111,150	243,326,439,590,794
Gearbox backlash	°	0.5	0.6	0.7	0.75
Max. continuous output power	W	100	50	25	8
Max. peak output power	W	125	62	31	10
Max. continuous input speed	rpm	6000	7000	7000	7000
Max. peak input speed	rpm	7500	8750	8750	8750
Max. continuous torque	Nm	1.25	2.9	5.0	5.0
Max. peak torque	Nm	1.6	3.6	6.3	6.3
Max. efficiency	%	90	81	72	65
Gearbox weight	g	103	150	174	198
Gearbox length (L)	mm	24.2	36.9	43.5	50.2

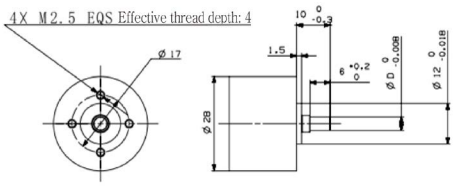
Motor Gear Specifications

1st Reduction ratio	Gear Teeth	Gear Thickness (mm)	Shaft Diameter (ΦD)	Material
3.947	19	6	$4^{-0.015}_{-0.025}$	Steel
5.308	13	6	$3^{-0.013}_{-0.023}$	Steel
6.6	10	6	$2^{-0.012}_{-0.022}$	Steel

Gearbox Dimensional Drawing



Motor Mounting Dimensions



36PGX

Main Specifications

Item	Specification
Housing material	Metal
Gear type	Spur gear
Gear material	Steel
Output shaft material	Stainless steel
Output bearing	Ball bearing
Radial backlash (flange reference 10 mm)	≤ 0.03 mm
Axial backlash	≤ 0.2 mm
Max. radial load (flange reference 10 mm)	≤ 250 N
Max. axial load	≤ 240 N
Max. allowable installation force	≤ 300 N
Rotation direction	Same direction as input
Operating temperature range	-40 °C ~ +100 °C

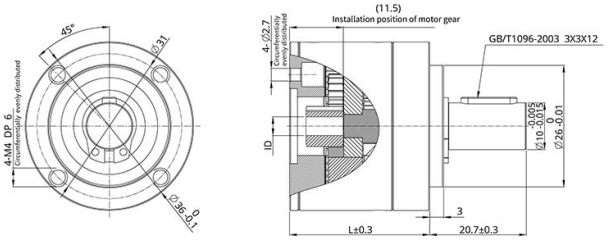
Technical Specifications

Item	Unit	Specification			
Number of gear stages	-	1	2	3	4
Reduction ratio	-	3.9,5.3	16,21,28	62,83,111,150	243,326,439,590,794
Gearbox backlash	°	0.5	0.6	0.7	0.8
Max. continuous output power	W	185	90	45	15
Max. peak output power	W	230	115	60	19
Max. continuous input speed	rpm	6000	6000	6000	6000
Max. peak input speed	rpm	7500	7500	7500	7500
Max. continuous torque	Nm	2.3	5.4	9.3	9.3
Max. peak torque	Nm	2.9	6.8	11.6	11.6
Max. efficiency	%	90	80	72	65
Gearbox weight	g	156	238	277	315
Gearbox length (L)	mm	30	44.7	51.3	58

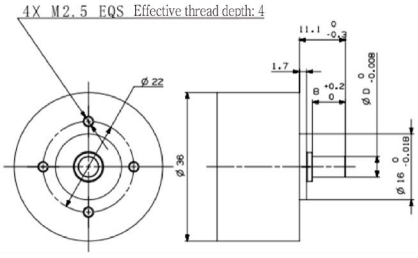
Motor Gear Specifications

1st Reduction ratio	Gear Teeth	Gear Thickness (mm)	Shaft Diameter (ΦD)	Material
3.947	19	8	$5^{-0.015}_{-0.025}$	Steel
5.308	13	8	$4^{-0.015}_{-0.025}$	Steel
6.6	10	8	$3^{-0.013}_{-0.023}$	Steel

Gearbox Dimensional Drawing



Motor Mounting Dimensions



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Main Specifications

Item	Specification
Housing material	Metal
Gear type	Spur gear
Gear material	Steel
Output shaft material	Stainless steel
Output bearing	Ball bearing
Radial backlash (flange reference 12 mm)	≤ 0.03 mm
Axial backlash	≤ 0.2 mm
Max. radial load (flange reference 12 mm)	≤ 400 N
Max. axial load	≤ 350 N
Max. allowable installation force	≤ 500 N
Rotation direction	Same direction as input
Operating temperature range	-40 °C ~ +100 °C

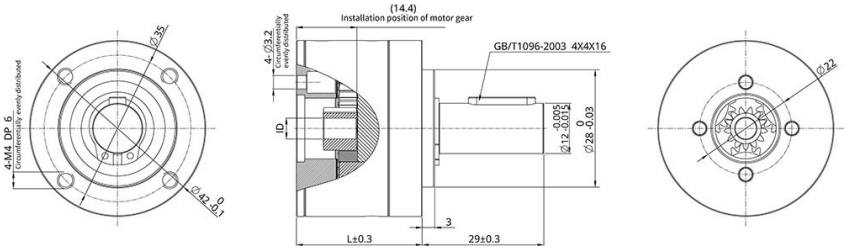
Technical Specifications

Item	Unit	Specification			
Number of gear stages	-	1	2	3	4
Reduction ratio	-	3.9,5.3	16,21,28	62,83,111,150	243,326,439,590,794
Gearbox backlash	°	0.3	0.4	0.5	0.6
Max. continuous output power	W	480	200	85	20
Max. peak output power	W	600	250	106	25
Max. continuous input speed	rpm	6000	6000	6000	6000
Max. peak input speed	rpm	7500	7500	7500	7500
Max. continuous torque	Nm	3.0	7.5	15	15
Max. peak torque	Nm	4.5	11.3	22.5	22.5
Max. efficiency	%	90	81	72	64
Gearbox weight	g	252	405	476	544
Gearbox length (L)	mm	36.1	54.9	63.6	72.4

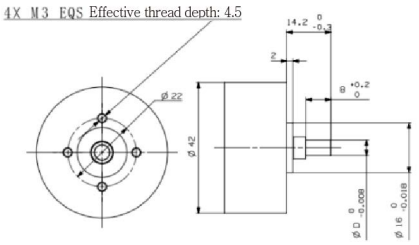
Motor Gear Specifications

1st Reduction ratio	Gear Teeth	Gear Thickness (mm)	Shaft Diameter (ΦD)	Material
3.947	19	8	$6^{-0.018}_{-0.028}$	Steel
5.308	13	8	$5^{-0.015}_{-0.025}$	Steel
6.6	10	8	$5^{-0.015}_{-0.025}$	Steel

Gearbox Dimensional Drawing



Motor Mounting Dimensions



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Precision Motion Specialist

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Catalog Issued: May 2026