



**KOCO**  
Group

## A VARIETY OF APPLICATIONS



PRECISION DC CORELESS MOTOR

1



BRUSHLESS DC MOTOR

2



ELECTRONIC SPEED CONTROLLER

3



**PRECISION GEARMOTOR**

4



PRECISION SERVO MOTOR

5



DC CORELESS MOTOR

6



FLAT DC MOTOR

7



DC CORE MOTOR

8



MINI STEP MOTOR

9



SONIC MOTOR

10



# Overview of the PRECISION GEARMOTORS

	<b>Motor No.</b>	<b>Dia x Length (max)</b>	<b>Max. Power</b>	<b>Page</b>
1	<b>06**...06MP...</b>	6.00 x 31.90 mm	0.24 W	4
2	<b>08**...08MP...</b>	8.00 x 38.80 mm	0.24 W	5
3	<b>10**...10MP...</b>	10.00 x 43.30 mm	0.23 W	6
4	<b>12**...12MP...</b>	12.40 x 62.70 mm	1.16 W	7
5	<b>12**...13MP...</b>	13.00 x 60.10 mm	1.16 W	8
6	<b>16**...16MP...</b>	16.00 x 56.65 mm	0.48 W	9
7	<b>22**...22MP...</b>	22.00 x 81.30 mm	0.47 W	10
8	<b>25**...25MP...</b>	25.00 x 85.70 mm	24.57 W	11
9	<b>29**...29MP...</b>	29.00 x 100.50 mm	53.18 W	12
10	<b>L0616...06PP...</b>	6.10 x 16.00 mm	0.01 W	13
11	<b>C1019...10PP...(1)</b>	10.00 x 19.45 mm	0.07 W	14
12	<b>C1019...10PP...(2)</b>	10.00 x 19.50 mm	0.35 W	15
13	<b>C1019...10PP...(3)</b>	10.00 x 19.50 mm	0.35 W	16
14	<b>C1238...12PP...(1)</b>	12.00 x 37.80 mm	0.29 W	17
15	<b>C1222...12PP...</b>	12.00 x 22.15 mm	0.16 W	18
16	<b>C1228...12PP...</b>	12.00 x 27.80 mm	0.20 W	19
17	<b>C1238...12PP...(2)</b>	12.00 x 37.80 mm	0.43 W	20
18	<b>S15**...12MS...</b>	15.00 x 21.90 mm		21
19	<b>C12**...12MS...</b>	10.00 x 12.00 x 26.10 mm	0.40 W	22
20	<b>C12**...14MS...</b>	14.00 x 26.10 mm	0.40 W	23
21	<b>C1630...13MS...</b>	15.50 x 12.00 x 29.60 mm	0.73 W	24
22	<b>C1631...14MS...</b>	15.50 x 12.00 x 30.60 mm	0.73 W	25
23	<b>C1630...16MS...</b>	15.50 x 12.00 x 29.60 mm	0.73 W	26
24	<b>1626...16MS...</b>	15.50 x 26.30 mm	2.39 W	27
25	<b>1638...16MS...</b>	16.00 x 37.60 mm	0.47 W	28

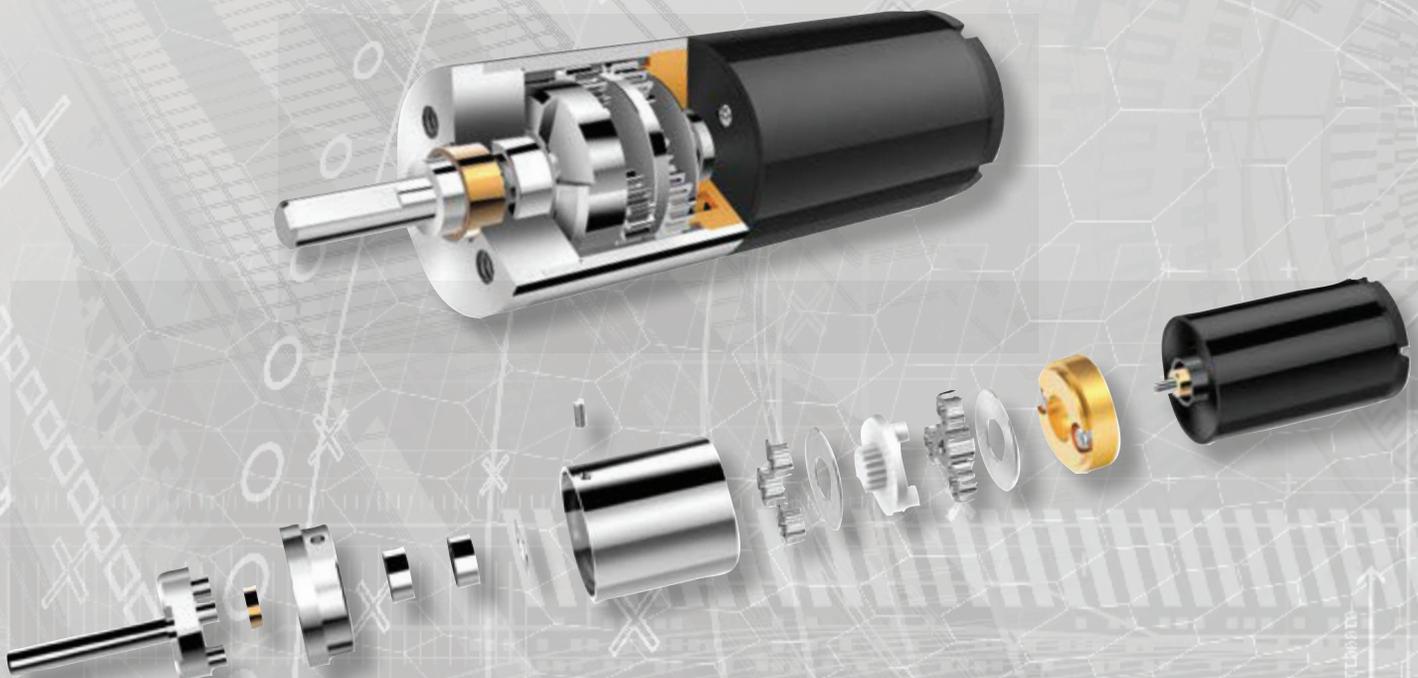
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## Product Introduction



# PRECISION GEARMOTORS

A selected drive motor can be equipped with various precision gearboxes resulting in a precision gearmotor. The gearboxes are available in several structural configurations and a range of gear ratios, providing speed reduction at increased torque. Depending upon the desired output torque and the drive motor size, gearboxes are available in both spur gear and planetary gear configurations. These precision gearmotors are widely used in the fields of medical equipment, scientific instruments, security systems and locks, industrial equipment, personal healthcare products, audio and visual products, and high-end hobby products.



# Planetary Gearbox Series · 06\*\*...06MP...

Motor Characteristics			0615N5M02-185-3.0
1	Voltage	V	3.0
2	Terminal resistance	Ω	8.3
3	No-load speed	rpm	18500
4	No-load current	mA	20
5	Stall torque	mNm	0.5
6	Stall current	mA	360
7	Nominal torque	mNm	0.25
8	Nominal speed	rpm	9200
9	Nominal current	mA	190
10	Max. output power	W	0.24
11	Max. efficiency	%	58
12	Back-EMF constant	mV/rpm	0.15
13	Torque constant	mNm/A	1.46
14	Speed/torque gradient	rpm/mNm	37196
15	Rotor inertia	gcm <sup>2</sup>	0.03
16	Weight	g	1.7

### Applications

Precision control fields such as medical instruments, industrial control, etc.

### Operating temperature range

-10 ~ +80°C

### Options

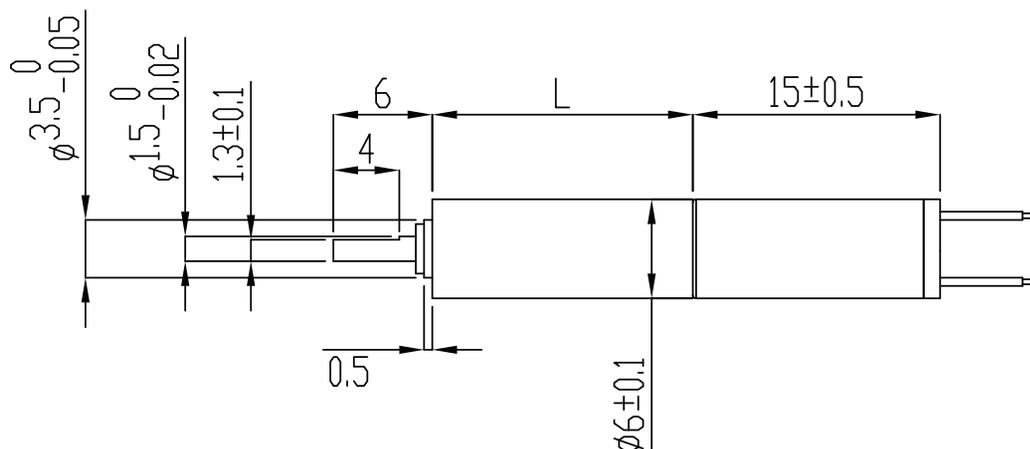
- Lead wires length
- Shaft length
- Special coils

Gearbox Characteristics				
	Reduction ratio	Max. rated torque	Max. momentary torque	Length (L)
		mNm	mNm	mm
1	23 ~ 41	33	50	12.1
2	110 ~ 226	33	50	14.5
3	531 ~ 1275	33	50	16.9

### Approx. actual size



### Dimension (mm) · 06\*\*...06MP...



# Planetary Gearbox Series · 08\*\*...08MP...

Motor Characteristics			0816N5M01-154-8.0
1	Voltage	V	8.0
2	Terminal resistance	Ω	60.0
3	No-load speed	rpm	15400
4	No-load current	mA	7
5	Stall torque	mNm	0.6
6	Stall current	mA	130
7	Nominal torque	mNm	0.30
8	Nominal speed	rpm	7410
9	Nominal current	mA	70
10	Max. output power	W	0.24
11	Max. efficiency	%	59
12	Back-EMF constant	mV/rpm	0.49
13	Torque constant	mNm/A	4.70
14	Speed/torque gradient	rpm/mNm	26638
15	Rotor inertia	gcm <sup>2</sup>	0.07
16	Weight	g	3.6

### Applications

Precision control fields such as medical instrument, industrial control, etc.

### Operating temperature range

-10 ~ +80°C

### Options

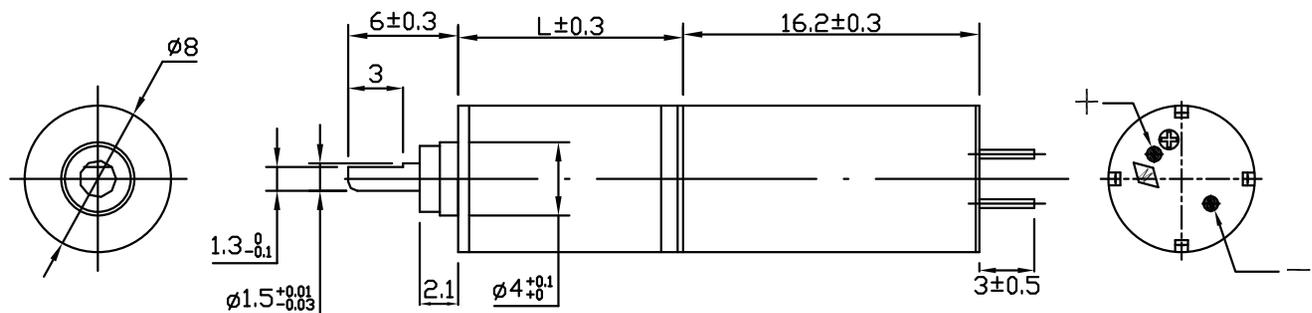
- Lead wires length
- Shaft length
- Special coils

Gearbox Characteristics				
	Reduction ratio	Max. rated torque	Max. momentary torque	Length (L)
		mNm	mNm	mm
1	4	5	15	9.1
2	16	10	30	11.8
3	64	20	60	14.5
4	256	30	90	17.2
5	1024	35	105	19.9
6	4096	40	120	22.6

### Approx. actual size



### Dimension (mm) · 08\*\*...08MP...



# Planetary Gearbox Series · 10\*\*...10MP...

Motor Characteristics			1016N5M90-109-7.5
1	Voltage	V	7.5
2	Terminal resistance	Ω	56.0
3	No-load speed	rpm	10900
4	No-load current	mA	7
5	Stall torque	mNm	0.8
6	Stall current	mA	130
7	Nominal torque	mNm	0.40
8	Nominal speed	rpm	5210
9	Nominal current	mA	70
10	Max. output power	W	0.23
11	Max. efficiency	%	60
12	Back-EMF constant	mV/rpm	0.65
13	Torque constant	mNm/A	6.23
14	Speed/torque gradient	rpm/mNm	14231
15	Rotor inertia	gcm <sup>2</sup>	0.2
16	Weight	g	5

### Applications

Precision control fields such as medical instruments, industrial control, etc.

### Operating temperature range

-10 ~ +80°C

### Options

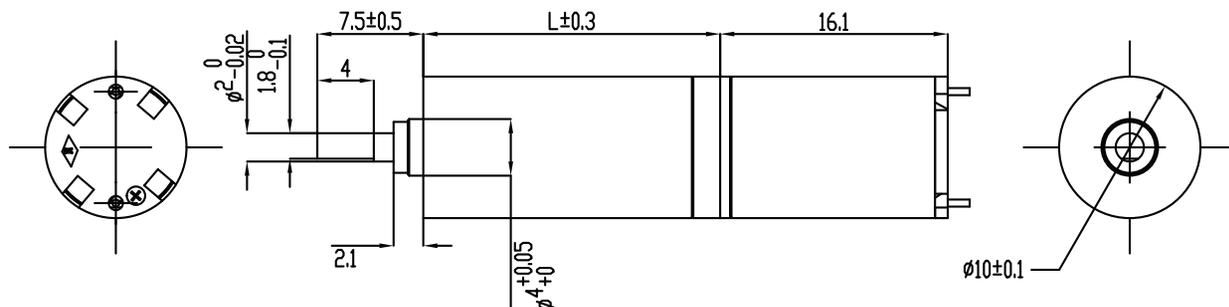
- Lead wires length
- Shaft length
- Special coils
- Encoder

Gearbox Characteristics				
	Reduction ratio	Max. rated torque	Max. momentary torque	Length (L)
		mNm	mNm	mm
1	4	5	15	11.7
2	16	10	30	14.8
3	64	30	90	17.9
4	256	40	120	21
5	1024	50	150	24.1
6	4096	60	180	27.2

### Approx. actual size



### Dimension (mm) · 10\*\*...10MP...





# Planetary Gearbox Series · 12\*\*...13MP...

Motor Characteristics			1230N5M08-63-12.0
1	Voltage	V	9.0
2	Terminal resistance	Ω	17.0
3	No-load speed	rpm	6300
4	No-load current	mA	8
5	Stall torque	mNm	7.0
6	Stall current	mA	530
7	Nominal torque	mNm	5.30
8	Nominal speed	rpm	1540
9	Nominal current	mA	400
10	Max. output power	W	1.16
11	Max. efficiency	%	77
12	Back-EMF constant	mV/rpm	1.41
13	Torque constant	mNm/A	13.44
14	Speed/torque gradient	rpm/mNm	898
15	Rotor inertia	gcm <sup>2</sup>	1
16	Weight	g	16

### Applications

Precision control fields such as medical instruments, industrial control, etc.

### Operating temperature range

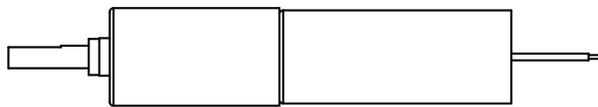
-10 ~ +80°C

### Options

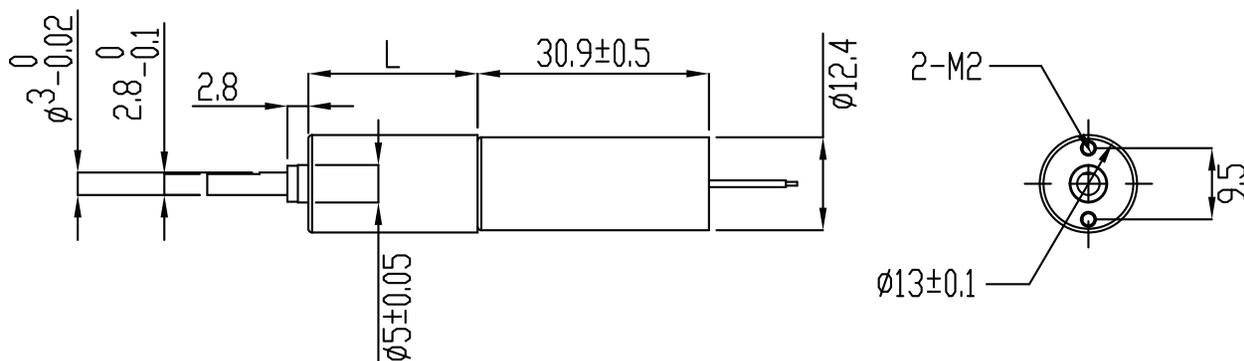
- Lead wires length
- Shaft length
- Special coils
- Encoder

Gearbox Characteristics				
	Reduction ratio	Max. rated torque	Max. momentary torque	Length (L)
		mNm	mNm	mm
1	4	80	240	12.7
2	16	120	360	16
3	64	160	480	19.3
4	256	180	540	22.6
5	1024	200	600	25.9
6	4096	200	600	29.2

### Approx. actual size



### Dimension (mm) · 12\*\*...13MP...





# Planetary Gearbox Series · 22\*\*...22MP...

Motor Characteristics			2233N5M2B07-23-12.0
1	Voltage	V	12.0
2	Terminal resistance	Ω	70.0
3	No-load speed	rpm	2300
4	No-load current	mA	7
5	Stall torque	mNm	7.8
6	Stall current	mA	170
7	Nominal torque	mNm	4.00
8	Nominal speed	rpm	1120
9	Nominal current	mA	90
10	Max. output power	W	0.47
11	Max. efficiency	%	64
12	Back-EMF constant	mV/rpm	5.00
13	Torque constant	mNm/A	47.79
14	Speed/torque gradient	rpm/mNm	295
15	Rotor inertia	gcm <sup>2</sup>	8
16	Weight	g	56

### Applications

Precision control fields such as medical instruments, industrial control, etc.

### Operating temperature range

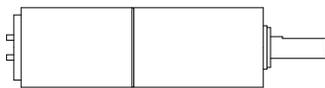
-10 ~ +80°C

### Options

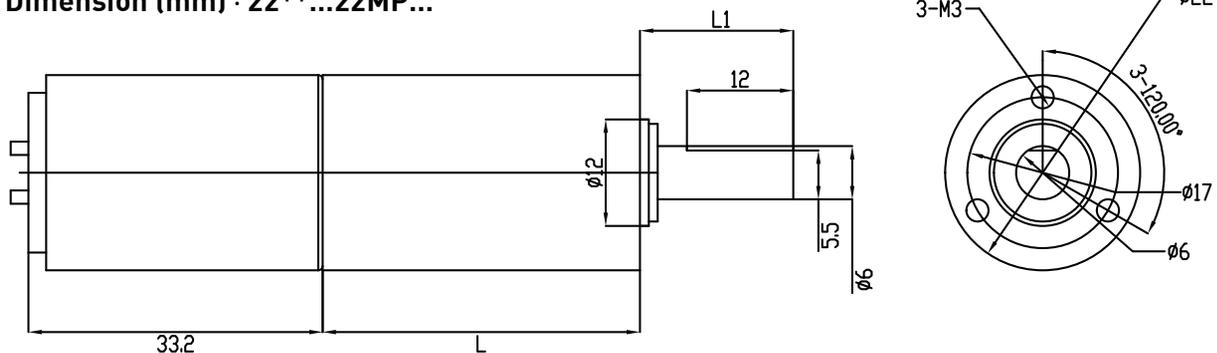
- Lead wires length
- Shaft length
- Special coils
- Encoder

Gearbox Characteristics				
	Reduction ratio	Max. rated torque	Max. momentary torque	Length (L)
		mNm	mNm	mm
1	5	100	300	23.3
2	18, 20, 25	300	900	29.5
3	66, 77, 90, 110, 136	400	1200	35.7
4	246, 336, 393, 484, 597, 735	500	1500	41.9
5	1475, 2124, 3968	600	1800	48.1

### Approx. actual size



### Dimension (mm) · 22\*\*...22MP...



# Planetary Gearbox Series · 25\*\*...25MP...

Motor Characteristics			2543N9C2B01-65-48.0
1	Voltage	V	48.0
2	Terminal resistance	Ω	23.0
3	No-load speed	rpm	6500
4	No-load current	mA	20
5	Stall torque	mNm	140
6	Stall current	mA	2090
7	Nominal torque	mNm	14.00
8	Nominal speed	rpm	5850
9	Nominal current	mA	230
10	Max. output power	W	24.57
11	Max. efficiency	%	81
12	Back-EMF constant	mV/rpm	7.31
13	Torque constant	mNm/A	69.84
14	Speed/torque gradient	rpm/mNm	46
15	Rotor inertia	gcm <sup>2</sup>	13.2
16	Weight	g	98

### Applications

Precision control fields such as medical instruments, industrial control, etc.

### Operating temperature range

-10 ~ +80°C

### Options

Lead wires length

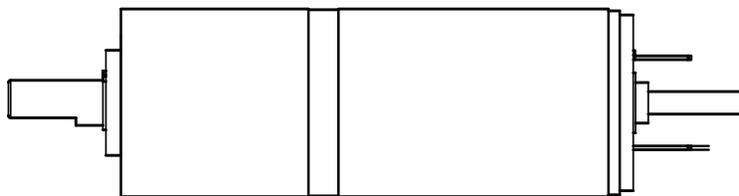
Shaft length

Special coils

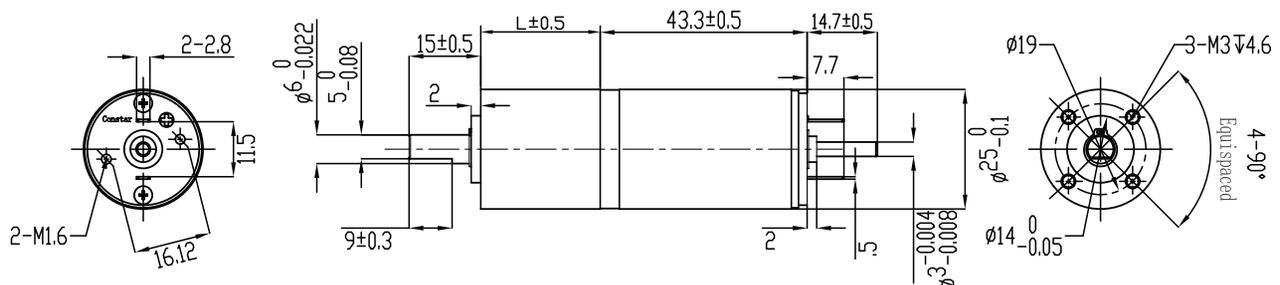
Encoder

Gearbox Characteristics				
	Reduction ratio	Max. rated torque	Max. momentary torque	Length (L)
		mNm	mNm	mm
1	3.6, 4.25	300	900	18.3
2	13, 15, 18	500	1500	25
3	36, 47, 55, 65, 77	1000	3000	30.8
4	114, 130, 168, 198, 234, 276, 326	1000	3000	36.6
5	467, 604, 713, 842, 994, 1174, 1386	1000	3000	42.4

### Approx. actual size



### Dimension (mm) · 25\*\*...25MP...



# Planetary Gearbox Series · 29\*\*...29MP...

Motor Characteristics			B2960NIE2B01-245-11.0
1	Voltage	V	11.0
2	Terminal resistance	Ω	0.5
3	No-load speed	rpm	24500
4	No-load current	mA	720
5	Stall torque	mNm	83
6	Stall current	mA	20750
7	Nominal torque	mNm	15
8	Nominal speed	rpm	20070
9	Nominal current	mA	4340
10	Max. output power	W	53.18
11	Max. efficiency	%	66
12	Back-EMF constant	mV/rpm	0.43
13	Torque constant	mNm/A	4.14
14	KV value	rpm/V	2227
15	Speed/torque gradient	rpm/mNm	296
16	Rotor inertia	gcm <sup>2</sup>	5
17	Weight	g	140

### Applications

Precision control fields such as medical instruments, industrial control, etc.

### Operating temperature range

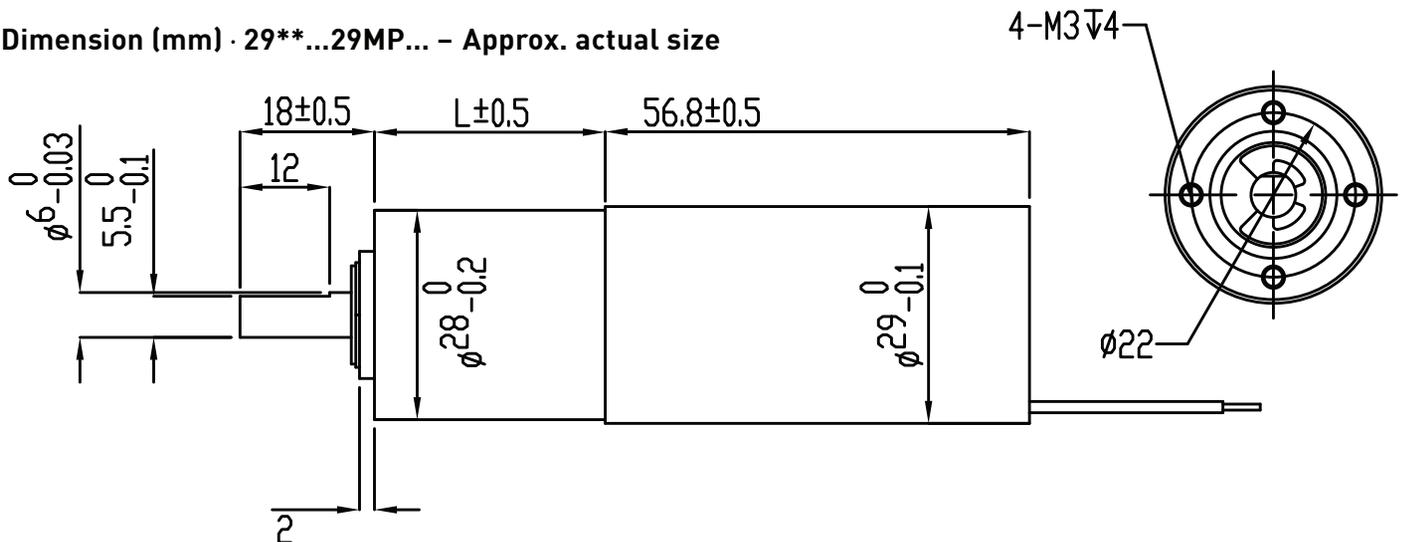
-10 ~ +100°C

### Options

- Lead wires length
- Shaft length
- Special coils

Gearbox Characteristics				
	Reduction ratio	Max. rated torque	Max. momentary torque	Length (L)
		mNm	mNm	mm
1	4, 5	200	600	24.5
2	14, 19	300	900	30.9
3	27, 35	400	1200	30.9
4	51, 71	600	1800	37.3
5	100, 139	800	2400	37.3
6	189, 264, 516, 721, 939	1000	3000	43.7

### Dimension (mm) · 29\*\*...29MP... – Approx. actual size



# Planetary Gearbox Series · L0616...06PP...

Motor Characteristics			L0616-1300-3.0-06PP25-0001
1	Voltage	V	3
2	Terminal resistance	Ω	13.7
3	No-load speed	rpm	1300
4	No-load current	mA	50
5	Max. torque	mNm	2.94
6	Load torque	mNm	0.196
7	Load speed	rpm	1210
8	Load current	mA	61
9	Reduction ratio		1/25
10	Weight	g	1.2

## Applications

Medical equipment, security equipment, audio and visual products, high-end toys, personal health care products, etc.

## Operating temperature range

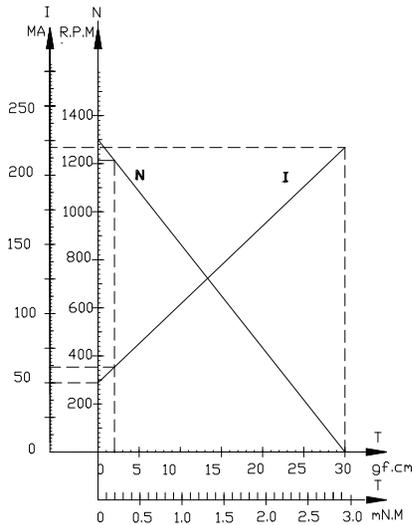
-10 ~ +70°C

## Options

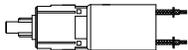
Lead wires length

Special coils

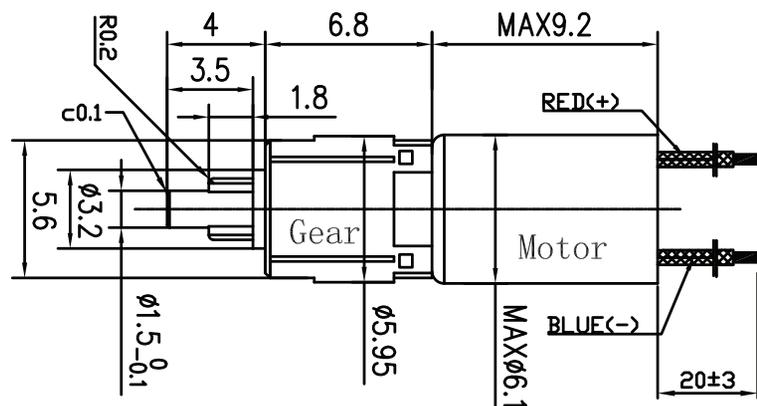
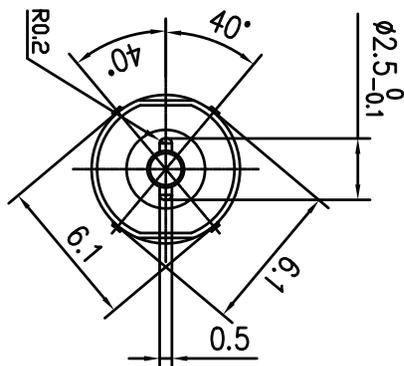
## Characteristics Curve · L0616-1300-3.0-06PP25-0001



## Approx. actual size



## Dimension (mm) · L0616...06PP...



# Planetary Gearbox Series · C1019...10PP...(1)

Motor Characteristics			C1019-110-2.5-10PP171-0051
1	Voltage	V	2.5
2	Terminal resistance	Ω	3.7
3	No-load speed	rpm	110
4	No-load current	mA	100
5	Max. torque	mNm	37.2
6	Load torque	mNm	9.8
7	Load speed	rpm	80
8	Load current	mA	230
9	Reduction ratio		1/171
10	Weight	g	3.8

## Applications

Medical equipment, security equipment, audio and visual products, high-end toys, personal health care products, etc.

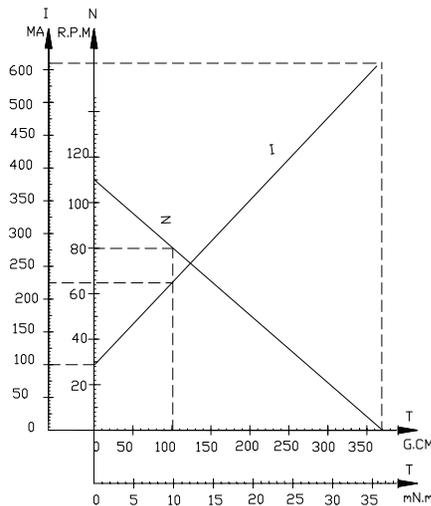
## Operating temperature range

-10 ~ +70°C

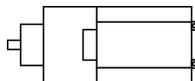
## Options

- Lead wires length
- Special coils

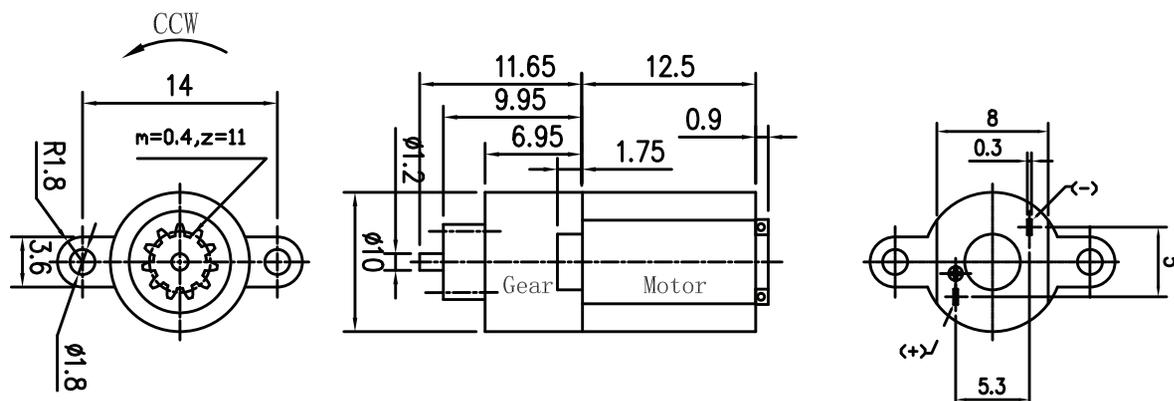
## Characteristics Curve · C1019-110-2.5-10PP171-0051



## Approx. actual size



## Dimension (mm) · C1019-110...10PP...(1)



# Planetary Gearbox Series · C1019...10PP...(2)

Motor Characteristics			C1019-110-2.5-10PP171-0053
1	Voltage	V	2.5
2	Terminal resistance	$\Omega$	3.7
3	No-load speed	rpm	110
4	No-load current	mA	100
5	Max. torque	mNm	37.2
6	Load torque	mNm	9.8
7	Load speed	rpm	80
8	Load current	mA	230
9	Reduction ratio		1/171
10	Weight	g	3.8

## Applications

Medical equipment, security equipment, audio and visual products, high-end toys, personal health care products, etc.

## Operating temperature range

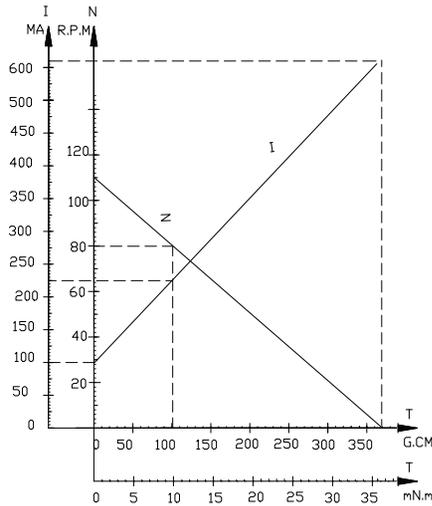
-10 ~ +70°C

## Options

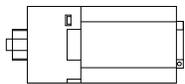
Lead wires length

Special coils

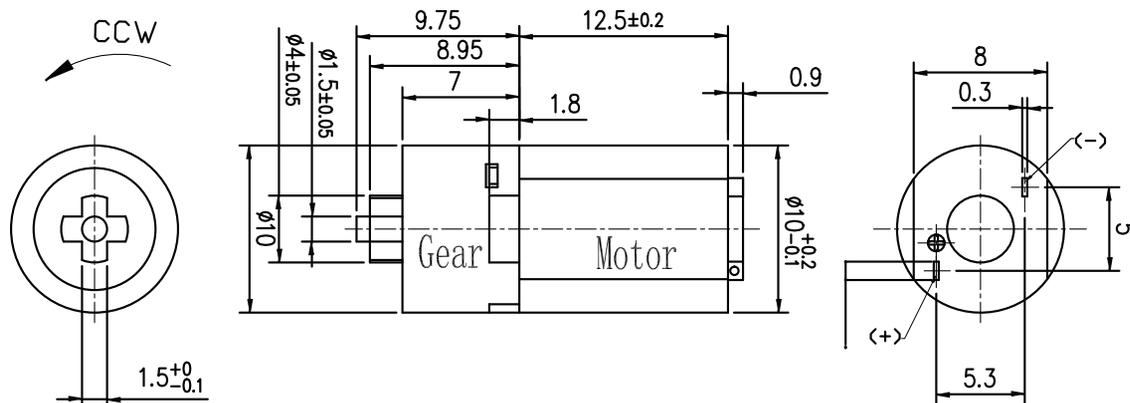
## Characteristics Curve · C1019-110-2.5-10PP171-0053



## Approx. actual size



## Dimension (mm) · C1019...10PP...(2)



# Planetary Gearbox Series · C1019...10PP...(3)

Motor Characteristics			C1019-110-2.5-10PP171-0052
1	Voltage	V	2.5
2	Terminal resistance	$\Omega$	3.7
3	No-load speed	rpm	110
4	No-load current	mA	100
5	Max. torque	mNm	37.2
6	Load torque	mNm	9.8
7	Load speed	rpm	80
8	Load current	mA	230
9	Reduction ratio		1/171
10	Weight	g	3.8

## Applications

Medical equipment, security equipment, audio and visual products, high-end toys, personal health care products, etc.

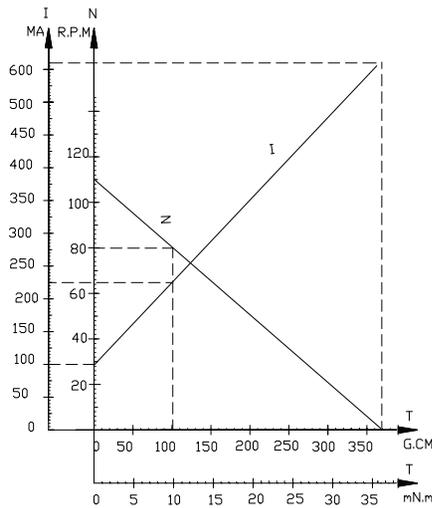
## Operating temperature range

-10 ~ +70°C

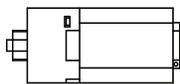
## Options

- Lead wires length
- Special coils

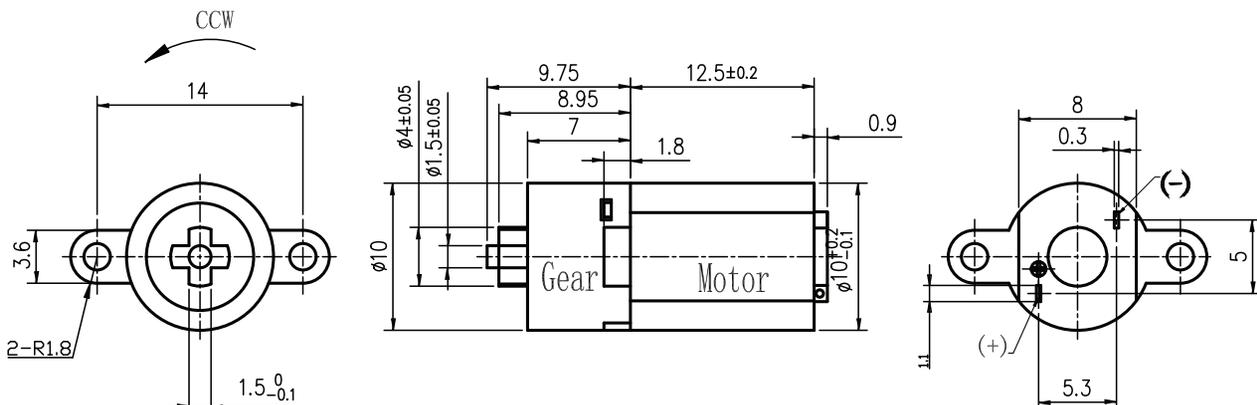
## Characteristics Curve · C1019-110-2.5-10PP171-0052



## Approx. actual size



## Dimension (mm) · C1019-110...10PP...(3)



# Planetary Gearbox Series · C1238...12PP...(1)

Motor Characteristics			C1238-86-5.0-12PP120-0004
1	Voltage	V	5
2	Terminal resistance	Ω	7.5
3	No-load speed	rpm	86
4	No-load current	mA	70
5	Max. torque	mNm	137.2
6	Load torque	mNm	19.6
7	Load speed	rpm	75
8	Load current	mA	160
9	Reduction ratio		1/120
10	Weight	g	15

## Applications

Medical equipment, security equipment, audio and visual products, high-end toys, personal health care products, etc.

## Operating temperature range

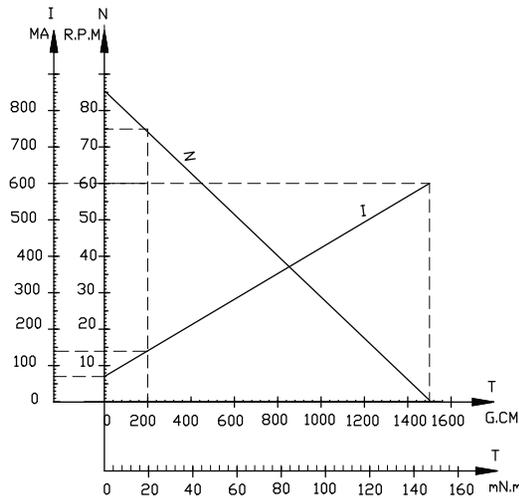
-10 ~ +70°C

## Options

Lead wires length

Special coils

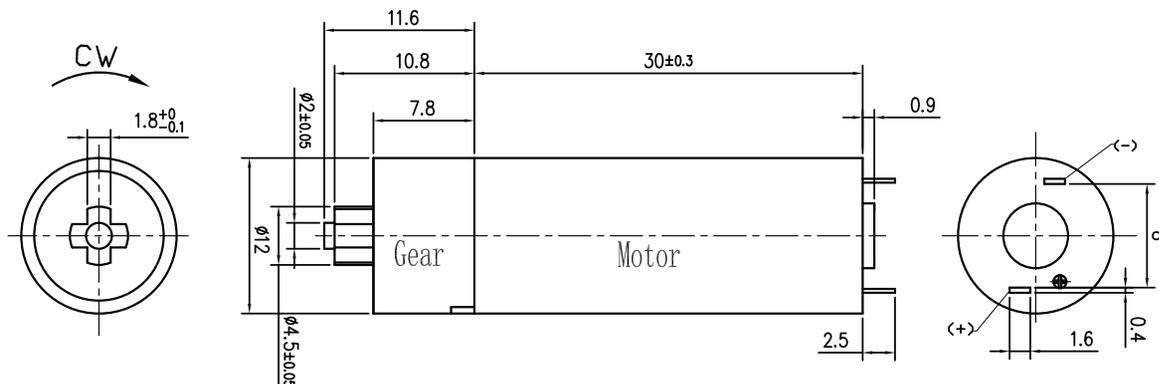
## Characteristics Curve · C1238-86-5.0-12PP120-0004



## Approx. actual size



## Dimension (mm) · C1238...12PP...(1)





# Planetary Gearbox Series · C1228...12PP...

Motor Characteristics			C1228-105-3.0-12PP120-0141
1	Voltage	V	3
2	Terminal resistance	$\Omega$	4
3	No-load speed	rpm	105
4	No-load current	mA	100
5	Max. torque	mNm	76.4
6	Load torque	mNm	19.6
7	Load speed	rpm	73
8	Load current	mA	260
9	Reduction ratio		1/120
10	Weight	g	9

## Applications

Medical equipment, security equipment, audio and visual products, high-end toys, personal health care products, etc.

## Operating temperature range

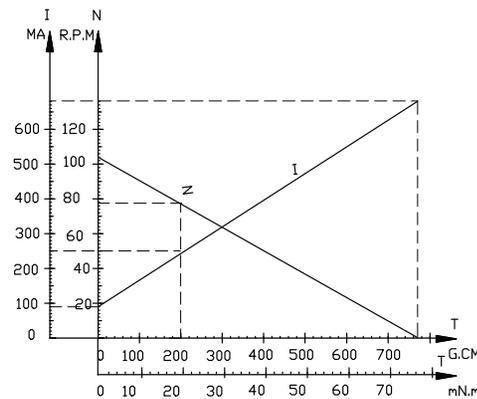
-10 ~ +70°C

## Options

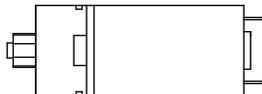
Lead wires length

Special coils

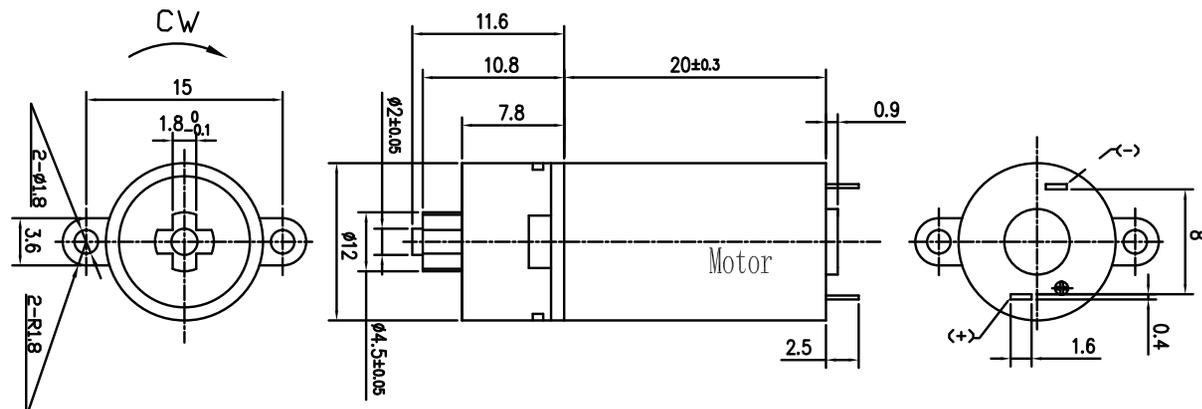
## Characteristics Curve · C1228-105-3.0-12PP120-0141



## Approx. actual size



## Dimension (mm) · C1228...12PP...





# Spur Gearbox Series · S15\*\*...12MS...

Motor Characteristics			1511P0209-013-5.0-0008
1	No. of phase		2
2	Excitation mode		1 - 2
3	Voltage	V	5
4	Resistance	Ω	12.6
5	Step angle	Deg	9°
6	Current	A	0.4
7	No-load pull-in frequency	pps	1800
8	No-load pull-out frequency	pps	2500
9	Detent torque	mNm	0.80
10	Pull-in torque	mNm	1
11	Load pull-in frequency	pps	1000
12	Weight	g	9

## Applications

Precision control fields such as medical instruments, industrial control, etc.

## Operating temperature range

-10 ~ +80°C

## Options

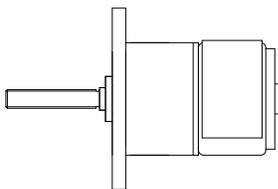
Lead wires length

Shaft length

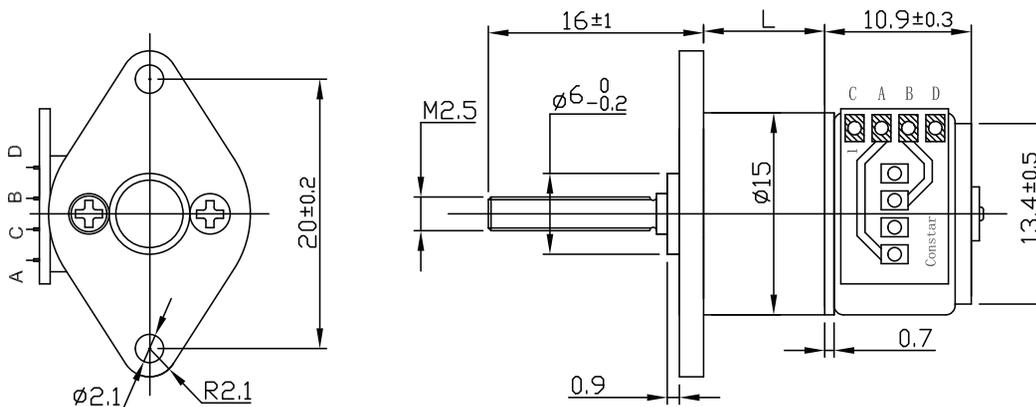
Special coils

Gearbox Characteristics				
	Reduction ratio	Max. rated torque	Max. momentary torque	Length (L)
		mNm	mNm	mm
1	3, 5, 10	20	60	9
2	17, 20, 30, 36	30	90	9
3	50, 63	40	120	9
4	100, 150, 210	50	150	9
5	250, 298	70	200	9
6	380, 625, 1000	80	250	11

## Approx. actual size



## Dimension (mm) · S15\*\*...12MS...



# Spur Gearbox Series · C12\*\*...12MS...

Motor Characteristics			C1215F33-0128	C1215F13-0462
1	Voltage	V	6.0	1.5
2	Terminal resistance	Ω	40.0	1.2
3	No-load speed	rpm	8300	11800
4	No-load current	mA	25	100
5	Stall torque	mNm	0.72	1.28
6	Stall current	mA	150	1250
7	Nominal torque	mNm	0.35	0.60
8	Nominal speed	rpm	4260	6287
9	Nominal current	mA	90	640
10	Max. output power	W	0.16	0.40
11	Max. efficiency	%	35	51
12	Back-EMF constant	mV/rpm	0.60	0.12
13	Torque constant	mNm/A	5.75	1.12
14	Speed/torque gradient	rpm/mNm	11543	9188
15	Rotor inertia	gcm <sup>2</sup>	0.3	0.3
16	Weight	g	5.4	5.4

## Applications

Precision control fields such as medical instruments, industrial control, etc.

## Operating temperature range

-10 ~ +80°C

## Options

Lead wires length

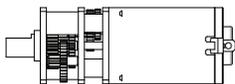
Shaft length

Special coils

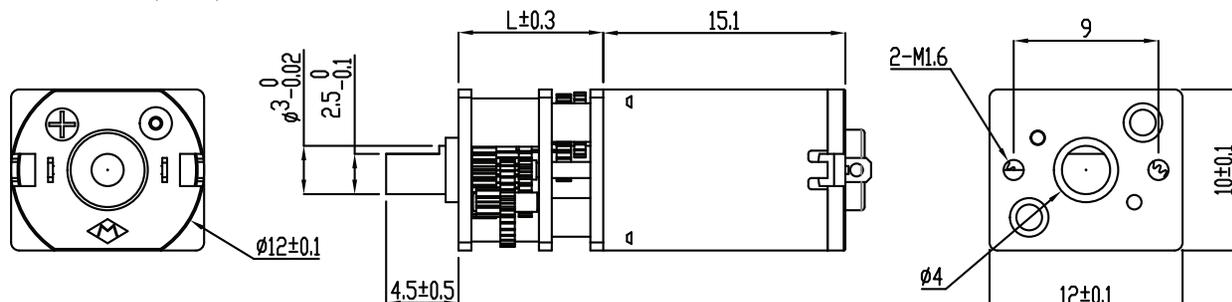
Encoder

Gearbox Characteristics				
	Reduction ratio	Max. rated torque	Max. momentary torque	Length (L)
		mNm	mNm	mm
1	3, 5, 10	20	60	9
2	17, 20, 30, 36	30	90	9
3	50, 63	40	120	9
4	100, 150, 210	50	150	9
5	250, 298	70	200	9
6	380, 625, 1000	80	250	11

## Approx. actual size



## Dimension (mm) · C12\*\*...12MS...



## Spur Gearbox Series · C12\*\*...14MS...

Motor Characteristics			C1215F33-0128	C1215F13-0462
1	Voltage	V	6.0	1.5
2	Terminal resistance	Ω	40.0	1.2
3	No-load speed	rpm	8300	11800
4	No-load current	mA	25	100
5	Stall torque	mNm	0.72	1.28
6	Stall current	mA	150	1250
7	Nominal torque	mNm	0.35	0.60
8	Nominal speed	rpm	4260	6287
9	Nominal current	mA	90	640
10	Max. output power	W	0.16	0.40
11	Max. efficiency	%	35	51
12	Back-EMF constant	mV/rpm	0.60	0.12
13	Torque constant	mNm/A	5.75	1.12
14	Speed/torque gradient	rpm/mNm	11543	9188
15	Rotor inertia	gcm <sup>2</sup>	0.3	0.3
16	Weight	g	5.4	5.4

### Applications

Precision control fields such as medical instruments, industrial control, etc.

### Operating temperature range

-10 ~ +80°C

### Options

Lead wires length

Shaft length

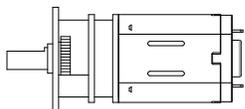
Special coils

Encoder

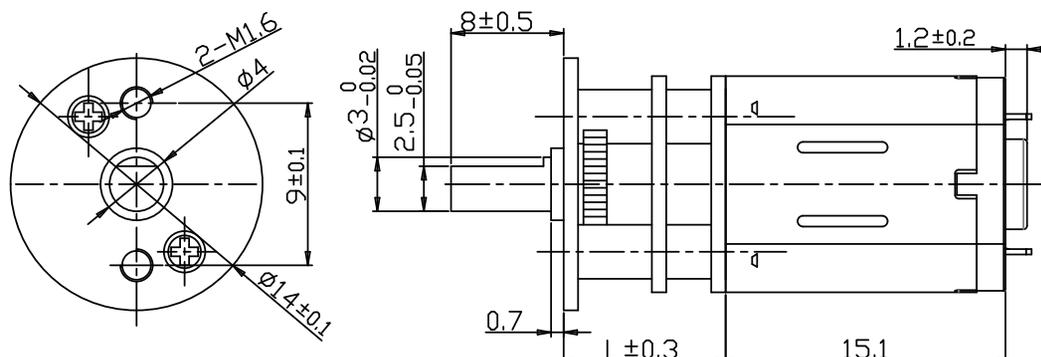
### Gearbox Characteristics

	Reduction ratio	Max. rated torque	Max. momentary torque	Length (L)
		mNm	mNm	mm
1	3, 5, 10	20	60	9
2	17, 20, 30, 36	30	90	9
3	50, 63	40	120	9
4	100, 150, 210	50	150	9
5	250, 298	70	200	9
6	380, 625, 1000	80	250	11

### Approx. actual size



### Dimension (mm) · C12\*\*...14MS...



# Spur Gearbox Series · C1630...13MS...

Motor Characteristics			C1620F13-0032
1	Voltage	V	6.0
2	Terminal resistance	Ω	10.3
3	No-load speed	rpm	11700
4	No-load current	mA	51
5	Stall torque	mNm	2.36
6	Stall current	mA	580
7	Nominal torque	mNm	2.10
8	Nominal speed	rpm	1305
9	Nominal current	mA	520
10	Max. output power	W	0.73
11	Max. efficiency	%	50
12	Back-EMF constant	mV/rpm	0.47
13	Torque constant	mNm/A	4.47
14	Speed/torque gradient	rpm/mNm	4950
15	Rotor inertia	gcm <sup>2</sup>	0.5
16	Weight	g	11

## Applications

Precision control fields such as medical instruments, industrial control, etc.

## Operating temperature range

-10 ~ +80°C

## Options

Lead wires length

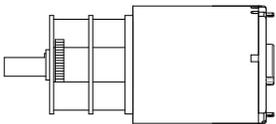
Shaft length

Special coils

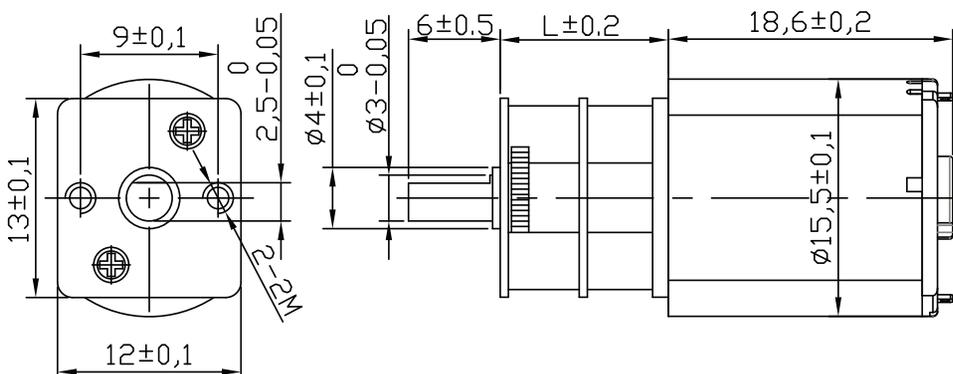
Encoder

Gearbox Characteristics				
	Reduction ratio	Max. rated torque	Max. momentary torque	Length (L)
		mNm	mNm	mm
1	3, 7, 10	20	60	11
2	16, 17, 20, 30, 35	30	90	11
3	50, 63	40	120	11
4	70, 86	50	150	11
5	115, 150	60	180	11
6	210, 250	70	200	11
7	360	80	220	11

## Approx. actual size



## Dimension (mm) · C1630...13MS...



# Spur Gearbox Series · C1631...14MS...

Motor Characteristics			C1620F13-0032
1	Voltage	V	6.0
2	Terminal resistance	Ω	10.3
3	No-load speed	rpm	11700
4	No-load current	mA	51
5	Stall torque	mNm	2.36
6	Stall current	mA	580
7	Nominal torque	mNm	2.10
8	Nominal speed	rpm	1305
9	Nominal current	mA	520
10	Max. output power	W	0.73
11	Max. efficiency	%	50
12	Back-EMF constant	mV/rpm	0.47
13	Torque constant	mNm/A	4.47
14	Speed/torque gradient	rpm/mNm	4950
15	Rotor inertia	gcm <sup>2</sup>	0.5
16	Weight	g	11

## Applications

Precision control fields such as medical instruments, industrial control, etc.

## Operating temperature range

-10 ~ +80°C

## Options

Lead wires length

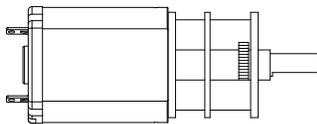
Shaft length

Special coils

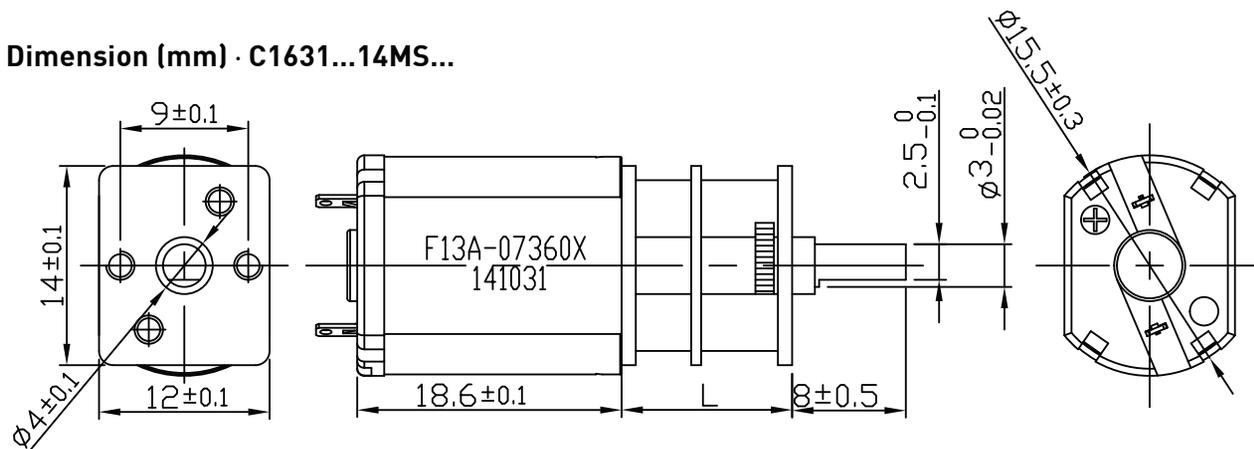
Encoder

Gearbox Characteristics				
	Reduction ratio	Max. rated torque	Max. momentary torque	Length (L)
		mNm	mNm	mm
1	63	60	160	12
2	115, 130, 150, 180	70	200	12
3	210, 250, 260	80	220	12
4	300, 350	100	270	12

## Approx. actual size



## Dimension (mm) · C1631...14MS...



# Spur Gearbox Series · C1630...16MS...

Motor Characteristics			C1620F13-0032
1	Voltage	V	6.0
2	Terminal resistance	Ω	10.3
3	No-load speed	rpm	11700
4	No-load current	mA	51
5	Stall torque	mNm	2.36
6	Stall current	mA	580
7	Nominal torque	mNm	2.10
8	Nominal speed	rpm	1305
9	Nominal current	mA	520
10	Max. output power	W	0.73
11	Max. efficiency	%	50
12	Back-EMF constant	mV/rpm	0.47
13	Torque constant	mNm/A	4.47
14	Speed/torque gradient	rpm/mNm	4950
15	Rotor inertia	gcm <sup>2</sup>	0.5
16	Weight	g	11

## Applications

Precision control fields such as medical instruments, industrial control, etc.

## Operating temperature range

-10 ~ +80°C

## Options

Lead wires length

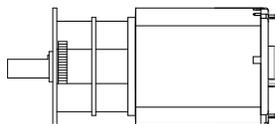
Shaft length

Special coils

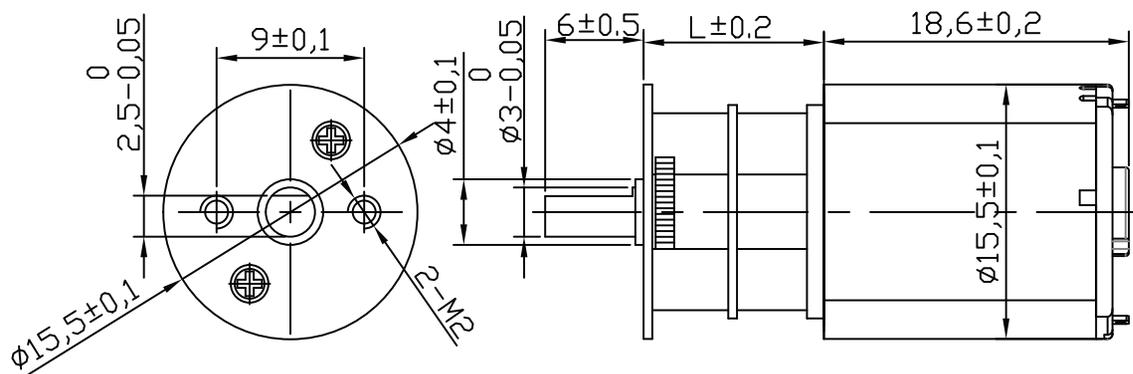
Encoder

Gearbox Characteristics				
	Reduction ratio	Max. rated torque	Max. momentary torque	Length (L)
		mNm	mNm	mm
1	3, 7, 10	20	60	11
2	16, 17, 20, 30, 35	30	90	11
3	50, 63	40	120	11
4	70, 86	50	150	11
5	115, 150	60	180	11
6	210, 250	70	200	11
7	360	80	220	11

## Approx. actual size



## Dimension (mm) · C1630...16MS...



# Spur Gearbox Series · 1626...16MS...

Motor Characteristics			1515N5M07-220-18.0
1	Voltage	V	18.0
2	Terminal resistance	Ω	30.5
3	No-load speed	rpm	22000
4	No-load current	mA	30
5	Stall torque	mNm	4.15
6	Stall current	mA	590
7	Nominal torque	mNm	1.80
8	Nominal speed	rpm	12465
9	Nominal current	mA	270
10	Max. output power	W	2.39
11	Max. efficiency	%	60
12	Back-EMF constant	mV/rpm	0.78
13	Torque constant	mNm/A	7.42
14	Speed/torque gradient	rpm/mNm	5297
15	Rotor inertia	gcm <sup>2</sup>	0.8
16	Weight	g	11

## Applications

Precision control fields such as medical instruments, industrial control, etc.

## Operating temperature range

-10 ~ +80°C

## Options

Lead wires length

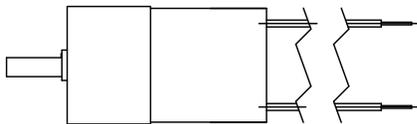
Shaft length

Special coils

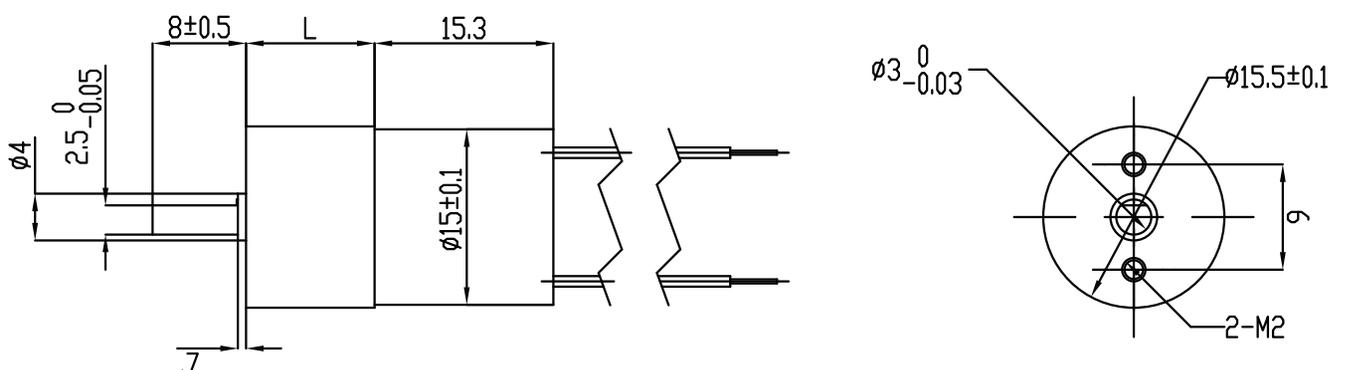
Encoder

Gearbox Characteristics				
	Reduction ratio	Max. rated torque	Max. momentary torque	Length (L)
		mNm	mNm	mm
1	3, 7, 10	20	60	11
2	16, 17, 20, 30, 35	30	90	11
3	50, 63	40	120	11
4	70, 86	50	150	11
5	115, 150	60	180	11
6	210, 250	70	200	11
7	360	80	220	11

## Approx. actual size



## Dimension (mm) · 1626...16MS...



# Spur Gearbox Series · 1638...16MS...

Motor Characteristics			1627N5M21-84-12.0
1	Voltage	V	12.0
2	Terminal resistance	Ω	70.9
3	No-load speed	rpm	8490
4	No-load current	mA	6
5	Stall torque	mNm	2.14
6	Stall current	mA	170
7	Nominal torque	mNm	1.00
8	Nominal speed	rpm	4514
9	Nominal current	mA	80
10	Max. output power	W	0.47
11	Max. efficiency	%	66
12	Back-EMF constant	mV/rpm	1.36
13	Torque constant	mNm/A	13.02
14	Speed/torque gradient	rpm/mNm	3976
15	Rotor inertia	gcm <sup>2</sup>	1.8
16	Weight	g	16

## Applications

Precision control fields such as medical instruments, industrial control, etc.

## Operating temperature range

-10 ~ +80°C

## Options

Lead wires length

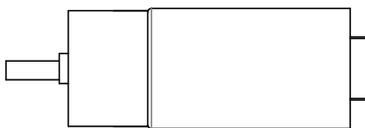
Shaft length

Special coils

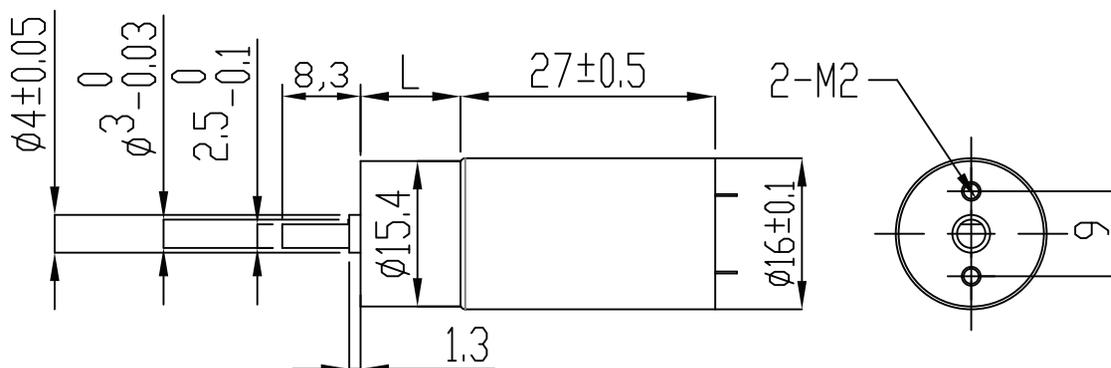
Encoder

Gearbox Characteristics				
	Reduction ratio	Max. rated torque	Max. momentary torque	Length (L)
		mNm	mNm	mm
1	10	20	60	10.6
2	21, 34	30	90	10.6
3	59, 75	50	150	10.6
4	105, 146	80	240	10.6
5	203, 257, 294, 360	100	300	10.6

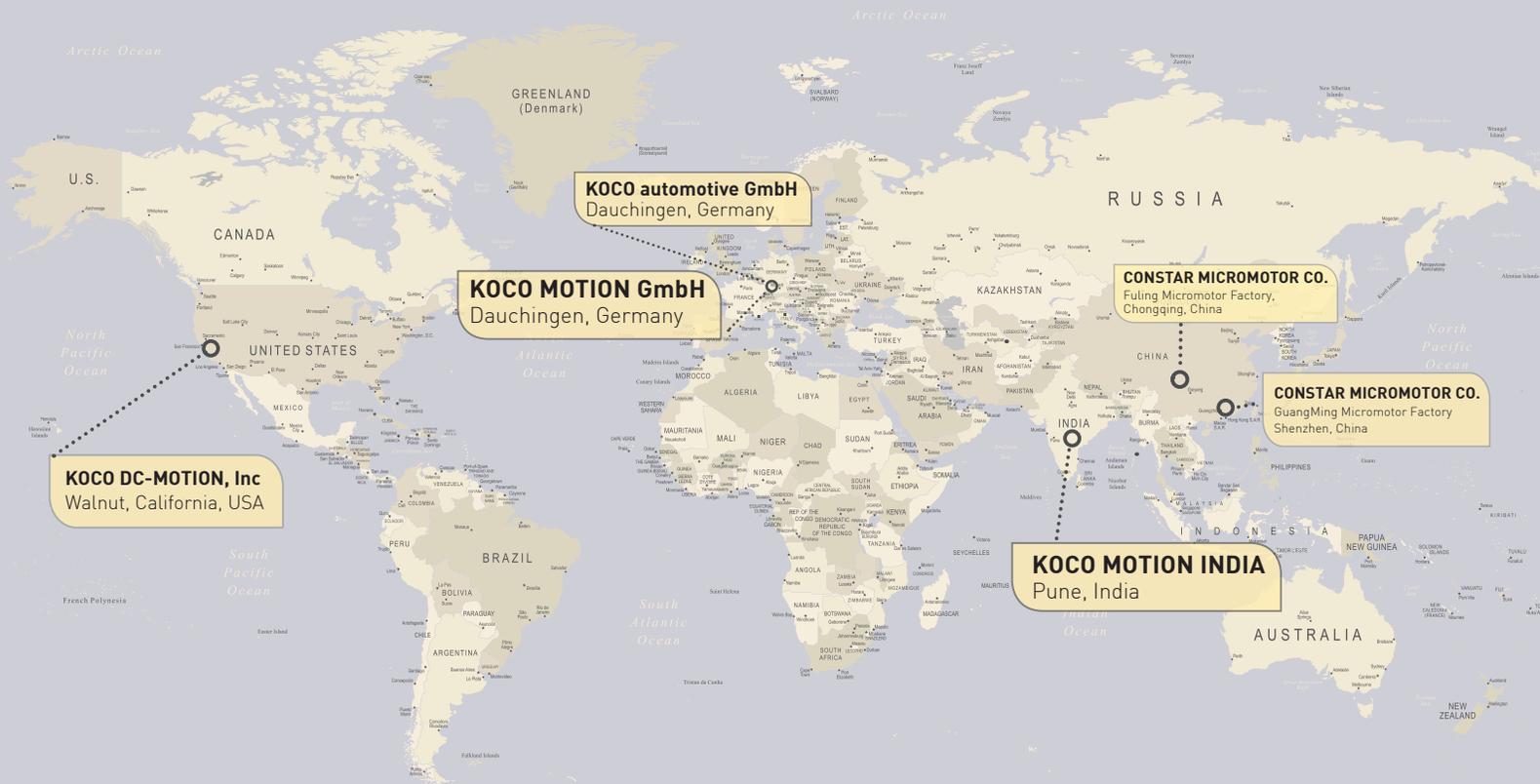
## Approx. actual size



## Dimension (mm) · 1638...16MS...



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