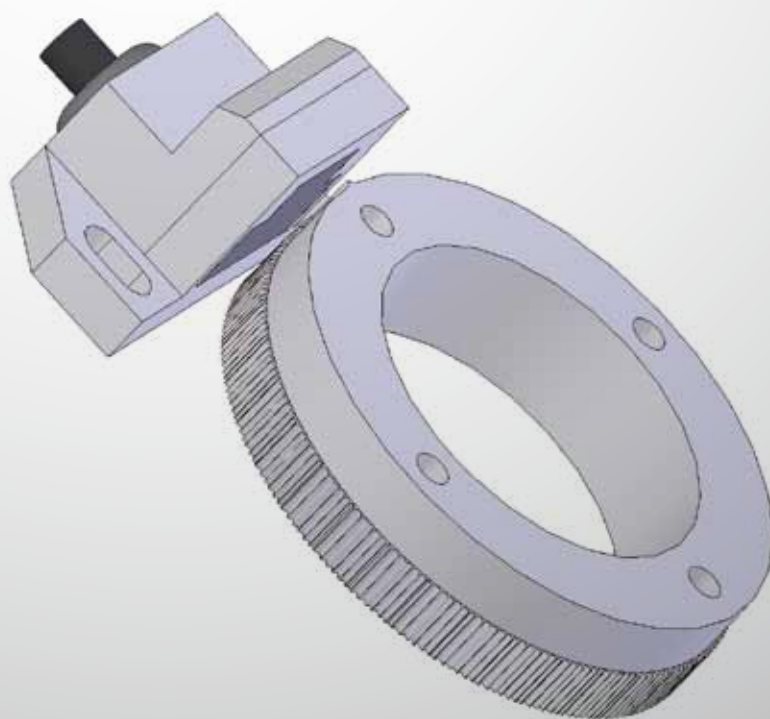


# 产品选型手册

Product selection guide



RDG Series

## Applications & Features



This product is mainly used to measure gear by applying magnetic induction theory with inductive unit, therefore the regular variation of magnetic field would be detected, finally the system would receive analog signal and square signal by circuit manipulation.

## Specification

RDG  $\frac{\square}{1}$  -  $\frac{\square}{2}$  /  $\frac{\square}{3}$  -  $\frac{\square}{4}$  -  $\frac{\square}{5}$  -  $\frac{\square}{6}$

1. A: analog signal or T: square wave signal.
2. The inner bore diameter of gear: mm.
3. Gear thickness: mm .
4. Gear modules: 0.3,0.4,0.5.
5. Resolution.
6. Cable length: m.

## Application

- Position detection(such as machine tool equipment: machining center, lathe)
- AC motor & speed position detection of motorized spindle
- The position detection of transportation equipment
- Elevator position detection
- Other special device application(dust-free atmosphere) or worse surroundings (more dust or shock)

## Encoder component

### 1. Reading head

- Standard built-in type: built-in signal processing, space saved, high protection class(IP 68), enable to apply into worse environment.
- Mini built-in type: built-in signal processing, small inductive volume, suitable for small space, make it possible for worse environment with high protection class(IP 68).

### 2. Gear

- Standard gear: modules with 0.3, 0.4, 0.5mm, 128 teeth, 256 teeth, 512 teeth, 1024 teeth gear are available

## Measuring principle

- Applying magnetic field with inductive unit, the inductive contactless reading head is based on it to response the teeth of gear, and it could be treated as 1vpp or TTL (RS422 Line Driver) by circuit correction signal or division signal.

## Output signal

- Half-sine(1vpp) and square wave(TTL) are available in the output signal, and could be selected by controller requirement.

## Performance and feature

- Acquire rotary position and speed by non-contact inductive way, so there is no need to concern mechanical abrasion, and no need to concern ring gear backlash by direct rotation.
- Optional specification modules for measuring gear: 1.3, 0.4, 0.5
- High response output: 0-600KHz, half-sine(1 vpp) and square wave(TTL) are available in the output signal for controller requirement.
- The advantages of built-in type inductive reading head are small volume, suitable for small installation space, make it possible in worse environment with high protection class(IP 68).
- Avoid common chemical pollution in industrial occasion, keep the system in a long-term stability.
- Increase the machining precision in an effective way, fast drilling speed, high speed of tool exchange and continuity of pressure supply are all beneficial to position accuracy stability.

## Electrical Specifications of Reading Head

|                          | RDGA Analog Signal Output | RDGT Square Wave Signal Output |
|--------------------------|---------------------------|--------------------------------|
| Output circuit           | 5V $\pm$ 10%              | 5V $\pm$ 10%                   |
| Current consumption      | Less than 60ma            | Less than 60ma                 |
| Output mode              | Differential analog 1vpp  | TTL square wave signal         |
| The largest phase offset | 10 degree                 | 10 degree                      |
| Response frequency       | 600KHz                    | 600KHz                         |
| Operating temperature    | -20-80 ℃                  | -20-80 ℃                       |

Different kinds of gears have different sizes and application characteristics, the computing method of its overall dimension and gear ratio are as follows:

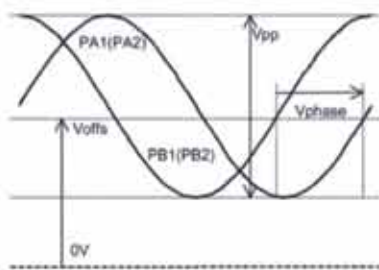
- Z : Gear modules (mm)
- N : Gear ratio
- OD : Gear dimension(mm)  $od = (N+2)*zmm$

For example:

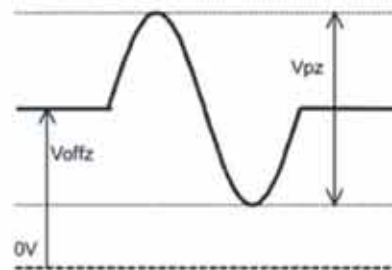
Gear modules: 0.4mm, gear ratio:256 Gear dimension  $OD=(256+2)*0.4=103.2mm$

Gear modules: 0.5mm, gear ratio:256 Gear dimension  $OD=(256+2)*0.5=129mm$

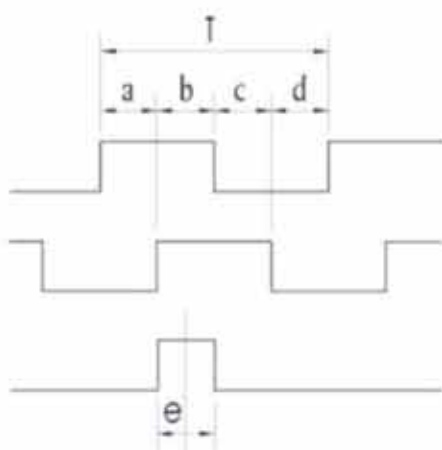
## Output Waveform



Waveform for A,B signal



Waveform for Z signal



$$a, b, c, d = \frac{T}{4} \pm \frac{T}{8} \quad e = T, \frac{T}{2}, \frac{T}{4}$$

f: U相上升沿到Z向中心距  $< \pm 1^\circ$   
From Uch(rise edge) to Zch center  $< \pm 1^\circ$

## Specification of Gear

|                     |                     |             |                    |       |
|---------------------|---------------------|-------------|--------------------|-------|
| Outer Diameter (mm) | Inner Diameter (mm) | Flange (mm) | Mounting Hole (mm) | Teeth |
|---------------------|---------------------|-------------|--------------------|-------|

## Modules 04

|       |     |       |     |     |
|-------|-----|-------|-----|-----|
| 205.6 | 180 | 194.4 | 4.5 | 512 |
| 205.6 | 180 | 194.4 | 4.5 | 512 |
| 205.6 | 160 | 175   | 4.5 | 512 |
| 205.6 | 140 | 175   | 4.5 | 512 |
| 154.4 | 108 | 120   | 4.5 | 384 |
| 154.4 | 108 | 124   | 5.5 | 384 |
| 103.2 | 82  | 92    | 4.5 | 256 |
| 103.2 | 90  | 96    | 3.5 | 256 |
| 103.2 | 65  | 80    | 3.5 | 256 |
| 103.2 | 45  |       |     | 256 |
| 80.8  | 60  | 70    | 3.5 | 200 |
| 52    | 35  | 43    | 3.5 | 128 |
| 52    | 30  | 41    | 3.5 | 128 |
| 52    | 35  | 43    | 3.5 | 128 |
| 40.8  | 20  | 30    | 3.5 | 100 |
| 26.4  | 10  |       |     | 64  |

## Modules 05

|     |     |     |     |     |
|-----|-----|-----|-----|-----|
| 257 | 230 | 244 | 4.5 | 512 |
| 129 | 95  | 112 | 3.5 | 256 |
| 65  | 50  | 57  | 3.5 | 128 |
| 65  | 40  | 53  | 4.2 | 128 |

## Connection

|             |     |      |        |      |        |       |       |       |       |       |       |       |
|-------------|-----|------|--------|------|--------|-------|-------|-------|-------|-------|-------|-------|
| Pins No.    | 3   | 4    | 5      | 6    | 7      | 8     | 9     | 11    | 12    | 13    | 14    | 15    |
| Cable Color | Red | Blue | Orange | Gray | Yellow | Green | Brown | White | Black | Black | White | White |
| Signal      | Z/  | Z    | B/     | B    | A/     | A     | G     | 0V    | Vcc   | Vcc   | 0V    | 0V    |

