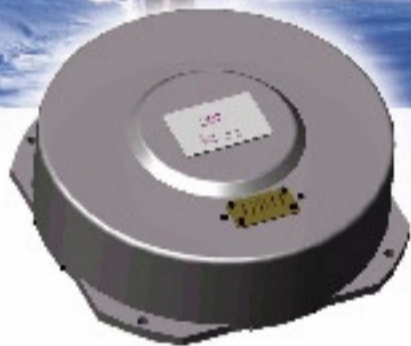
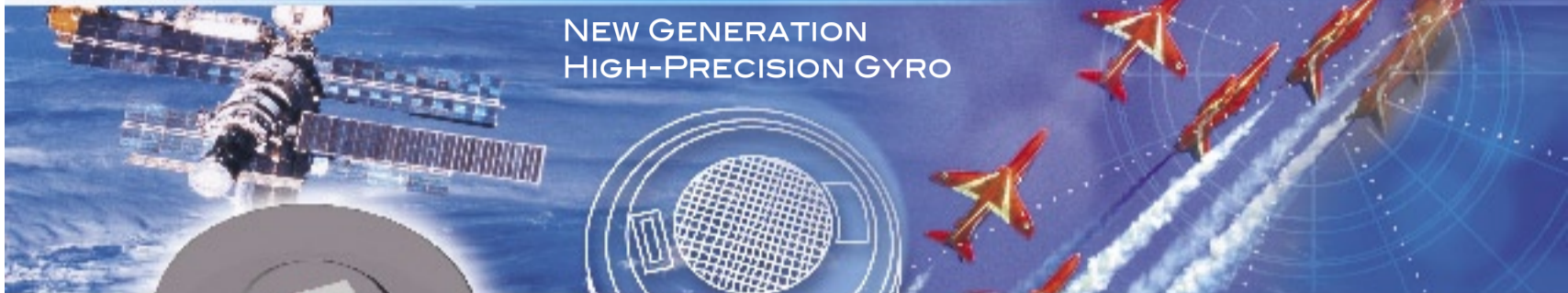
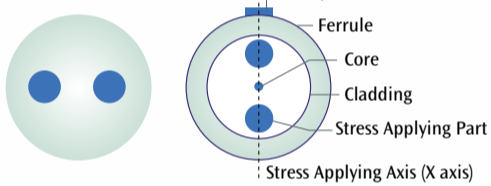


# OPTICAL GYROSCOPE

NEW GENERATION HIGH-PRECISION GYRO

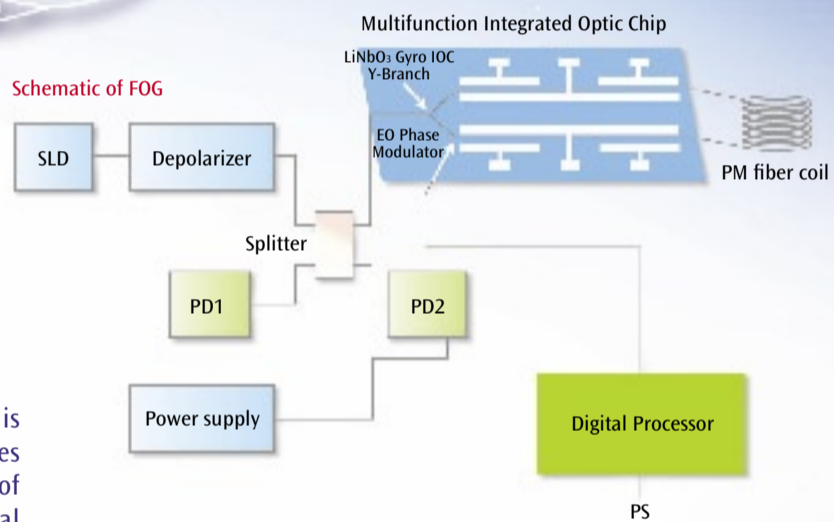


Panda Fiber



KWE Fiber Optic Gyroscopes' fundamental principle is based on Sagnac effect and our fiber optic gyroscopes are all-solid-state devices which offer a combination of high reliability and durability along with minimal mass-production cost.

Schematic of FOG



## Fiber Optic Gyroscope (FOG)

In this close-loop design, a multifunction integrated optic chip (MIOC) fabricated by High Temperature Proton Exchange is used for splitting the light into clockwise and counterclockwise waves, light polarization and for electro-optically imparting a phase modulation to the lightwaves in the loop. The signal processing design is based on conversion of the photodetector signal to a digital representation of the detected light intensity, followed by digital demodulation and integration. The loop is closed by driving the integrated optical phase modulator with a voltage ramp whose slope is proportional to rotation rate.

The sensing loop consists of a 0.2 to 1km of PM fiber. The superluminescent light emission diodes (SLD) are used to produce light of 0.83  $\mu\text{m}$  and 1.55  $\mu\text{m}$  wavelengths.

### Key Applications:

- Automobile Navigation Systems
- Aircraft Navigation
- Marine and Land Navigation
- Precision Space Application
- Motion Control Systems
- Pipe Mapping Systems

### PM Fiber Optical Components

- Depolarizers
- Splitters
- Patchcords

### Multifunction Integrated Optic Chip Parameters

- Half wave voltage : < 2V
- Polarization extinction ratio : > 50dB
- Intensity modulation : < 0.2 %
- Fiber-to-fiber insertion loss : < 6dB

### Polarization Maintaining Fiber

- For Gyro & Telecommunication Applications
- Splice-compatible with other PM fibers
  - Excellent availability
  - Cost-effective

## Fiber Optic Gyroscope PERFORMANCE

Parameter	Single axis	Single axis	Single axis	Three axis	Single axis
	SRS-2000	SRS-1000	SRS-500	TRS-500	SRS-200
Range of measured angular rate, °/sec	from $\pm 1$ to $\pm 10$	from $\pm 2$ to $\pm 20$	$\pm 100$	from $\pm 100$ to $\pm 500$	$\pm 200$
Bias drift at constant temperature, °/h	<0.01	from 0.01 to 0.1	<1.0	from 1 to 5	<5.0
Scale factor nonlinearity, %	$\leq 0.01$	$\leq 0.02$	$\leq 0.05$	$\leq 0.05$	$\leq 0.07$
Bandwidth, HZ	10	10-30	100	100-500	100
Random walk, °/h	0.001	$\leq 0.003$	$\leq 0.007$	$\leq 0.007$	$\leq 0.01$
Length of fiber coil, m	2000	1000	500	500	200
Weight (net), kg	1.2	0.8	0.8	1.1	0.8
Size, mm	$\phi 250 \times 80$	$\phi 150 \times 80$	$\phi 150 \times 80$	110x110x90	$\phi 150 \times 80$
Output	Digital	Digital RS232	Digital or/and Analog	Digital RS485 or/and Analog	Analog