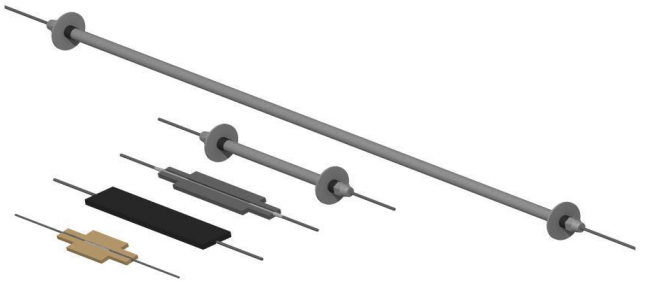
4.1 FBG Mountable Strain Sensor

General Characteristics : FBG KOREA sensor vs Other sensor



FBG KOREA Sensor

- FBG is molded with fiber optic protection package or can be optionally separated from the protective duct.
- Strain measurement method (Directly)
  - Possible for FBG sensor to be separated from the protection package
  - Changes of only the sensor
  - Not related with temperature dependency of the protection package
  - Easy to install on a concrete surface
  - Suitable for all kinds of structures

Other Sensor

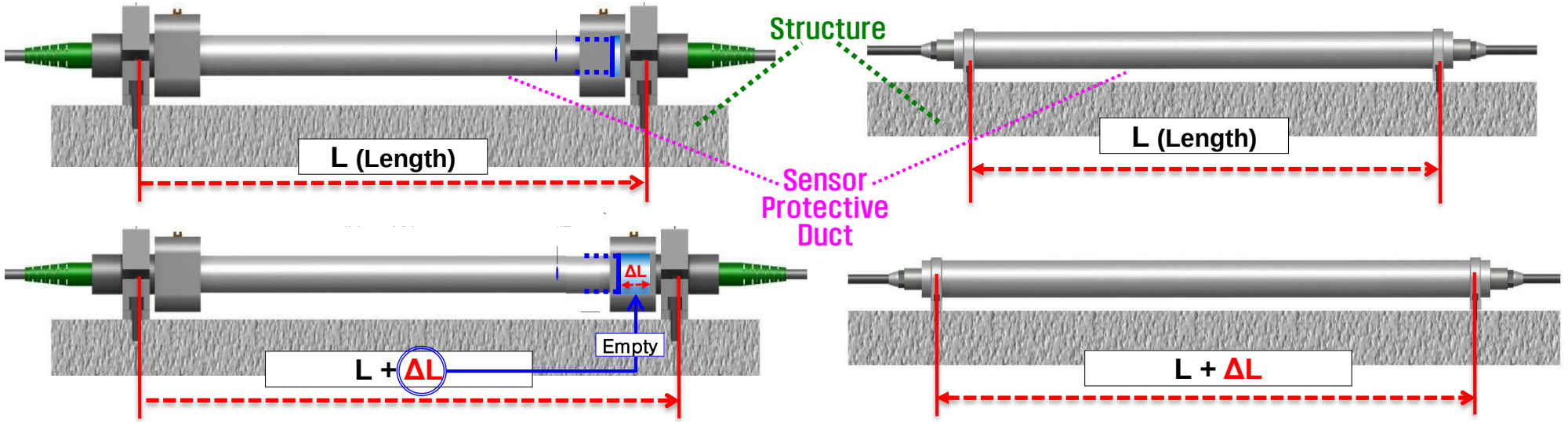
- FBG is molded with Fiber optic protection package as one body.
- Strain measurement method (Indirectly)
  - Impossible for FBG sensor to be separated from the protection package
  - Concurrent changes at the sensor and the protection package
  - High temperature dependency of the protection package
  - Possibility of large measurement errors
  - Unsuitable for a concrete surface

FBG KOREA Strain Sensor Advantages

- ✓ Apply to various structures and different fields
- ✓ Install sensors by connecting in succession on the same axis
- ✓ Install on a curved surface or slope by applying ball joints

4.1 FBG Mountable Strain Sensor

Measurement principle of FBG Mountable Strain Sensor : FBG KOREA Sensor vs Other Sensor



FBG KOREA Sensor

Not influenced by deformation of structure.

- → Sensitive reaction of the sensor (ex: changed over 1000 με at the tension 120g)
- → No effects by the expansion of the sensor protective duct depending on outside temperature change.

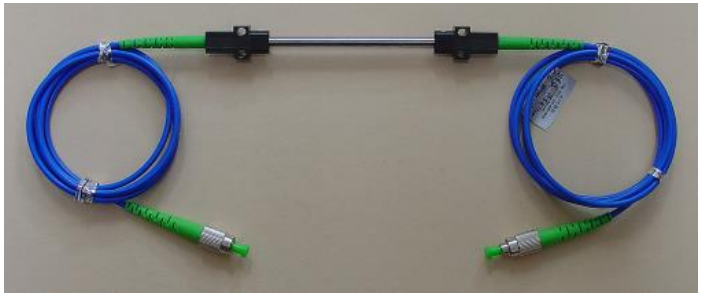
Other Sensor

Changed by the deformation of structure.

- --> Need strong forces to operate the sensor
- → Dull reaction of the sensor
- → Caused a signal distortion by the expansion of the sensor protective duct depending on outside temperature change.

★ **High sensitivity and availability at the concrete surface**

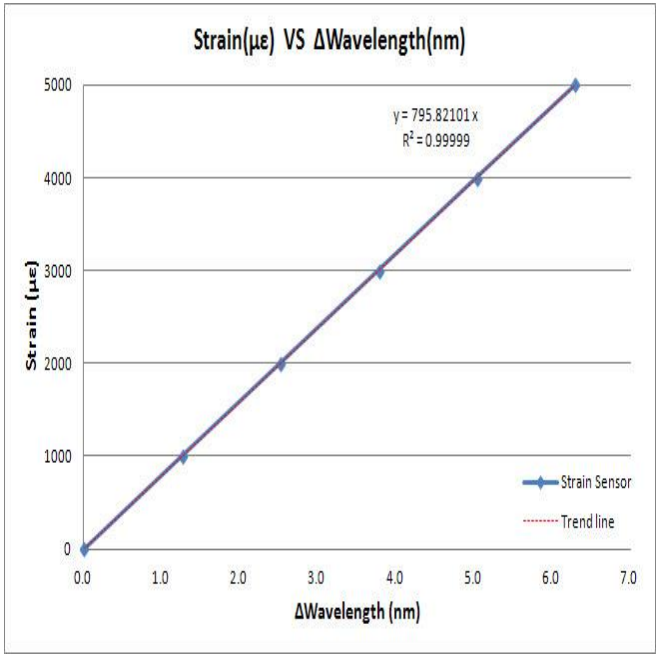
4.1 FBG Mountable Strain Sensor - Designation of Excellent R&D Revolutionary Product



"USA, EU, China, Japan, Canada patents" registered

- ✓ Safety evaluation of structures
- ✓ Long-term strain measurements of the structures
- ✓ Strain and stress measurements of the structures
- ✓ strain measurements of the structures by external forces
- ✓ Deformation Measurement of the outside of the structures or of its body
- ✓ High sensitivity due to the use of wavelength setting bolts
- ✓ Easily replaceable and reusable

Model	FBG-ST-310
Gauge length(mm)	100 ~ 1,500 (Depending on user's demand)
Measurement range(με)	±2,000 (Depending on user's demand)
FWHM(-3 dB point)	≦ 0.3 nm
Resolution(%.F.S)	± 0.05
Accuracy(%.F.S)	± 0.25, 0.5, 1 (Depending on user's demand)
Sensitivity(με)	≧ 1,000pm@ 120g tension
Wavelength(nm)	1,511 ~ 1,590
Reflectivity(%)	≧ 70
Operating temperature(℃)	-20 ~ 80



Wavelength set division

SET-A	
No.	Operating Wavelength range (nm)
1	1511.1~1516.2
2	1517.1~1522.2
3	1523.1~1528.2
4	1529.1~1534.2
5	1535.1~1540.2
6	1541.1~1546.2
7	1547.1~1552.2
8	1553.1~1558.2
9	1559.1~1564.2
10	1565.1~1570.2
11	1571.1~1576.2
12	1577.1~1582.2
13	1583.1~1588.2

SET-B	
No.	Operating Wavelength range (nm)
1	1514.1~1519.2
2	1520.1~1525.2
3	1526.1~1531.2
4	1532.1~1537.2
5	1538.1~1543.2
6	1544.1~1549.2
7	1550.1~1555.2
8	1556.1~1561.2
9	1562.1~1567.2
10	1568.1~1573.2
11	1574.1~1579.2
12	1580.1~1585.2

- 13 kinds of Set-A, 12 kinds of Set-B.
- Can make a total of 25 kinds from FBG Strain Sensor.