

Fiber Bragg Grating Sensing System

The FBG-SS series have been designed for fiber optic smart structure. The FBG-SS is a fast scan, high resolution, many channel counts and multi-sensor measurement system that provides high performance in mechanical strain, temperature and variation sensing applications.

Buildings, structures, and space vehicles can be equipped to sense and react to their surroundings by means of hair-thin glass fiber sensors embedded in structural materials and capable of carrying information and measuring changes in stress, and then environmental factors. Data is collected and transmitted to a central location. The FBG-SS includes up to 8 channel sources and detectors in a unit. The FBG-SS simultaneously measures 512 FBG reflected signals in 8 channels. The FBG-SS interfaces to PC via RS232.



Features

- ▶ Up to 8 built-in channels
- ▶ Very fast scanning speed
- ▶ High resolution
- ▶ Complete sensor system with sources and detectors
- ▶ Up to 512 FBGs on 8 channels
- ▶ Simultaneous structural health monitoring via 512 reflected optical signals from FBGs
- ▶ RS232 interface
- ▶ Reduced installation time

Applications

- ▶ Structural health monitoring of buildings bridges, roads and dams
- ▶ Structural health monitoring and damage detection of ship and aircraft
- ▶ Continuous monitoring of gas and oil pipelines pressure and temperature variation
- ▶ Simultaneous real time monitor different places via multi channels
- ▶ Real time monitoring of turbine blades
- ▶ Any fiber Bragg grating sensing system

Optical Characteristics

Parameter	Symbol	Min	Typ	Max	Unit
Operating wavelength	λ	1528	-	1568	nm
Optical channels	CH	1	-	8	
Sensors per channel ¹	SC	-	20	64	
Dynamic range ²	DR	-	30	-	dB
Resolution ³	R_s	-	-	1	pm
Repeatability	R_p	-5	-	5	pm
Scan frequency	SF	-	-	100	Hz
Optical power ⁴	P_{OUT}	-10	-	-	dBm

Note1. It depends on variance of strain or temperature.

Note2. This condition is 8channel FBG-SS. If channels are smaller than this condition, typical value is higher than 30dB.

Note3. Strain = $\sim 1\mu$ strain, Temperature = $\sim 0.1^\circ\text{C}$

Note4. This condition is 8channel FBG-SS. If channels are smaller than this condition, minimum value is higher than -10dBm.

Electrical & Environmental

Parameter	Typical value
Power supply voltage	AC 110 ~ 220 V
Interface	RS232
Operating temperature	0 ~ 50 °C
Storage temperature	-40 ~ 85 °C
Storage humidity	0 ~ 95% R.H
Power consumption*	20 W

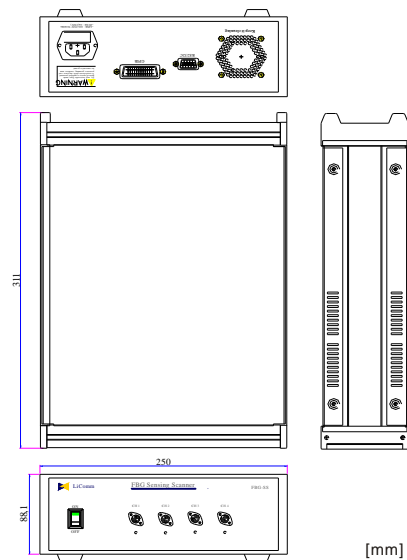
* Optical channels = 8 channel (@25 °C)

Ordering Information

FBG - SS -XX₁

XX₁ : Number of Channels

Mechanical Dimension



[mm]