

# OSI-D Dynamic Distributed Optical Fiber Sensing Monitoring System



## Description

The OSI-D is based on optical frequency domain reflection (OFDR) technology. Strain and temperature can be captured with mm spatial resolution over the entire sensing fiber. Due to optimized system and dynamic demodulation algorithm, the OFDR technology is extended to real-time and high speed testing application area with acquisition rate above 100 Hz. The system is designed to be suitable for various types of sensors, such as conventional single-mode fiber and weak reflective FBG array, and tens of

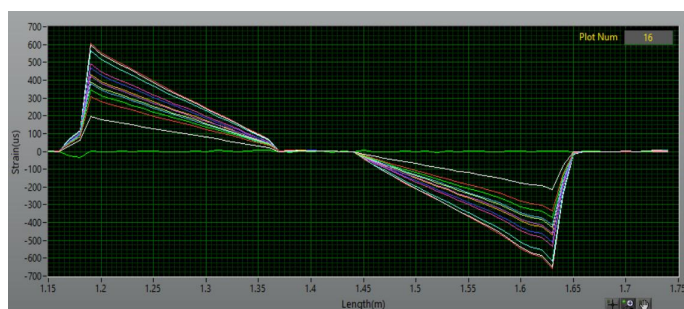
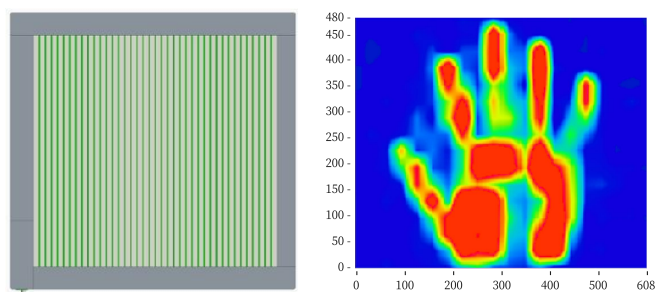
thousands of sensing points can be simultaneously measured along a single fiber. The system contains four measurement modes which can meet different demands of customers. Shape sensing function is available and customized function is also supported.

## Features

- Sensing length: 20m
- Maximum acquisition rates: 100Hz
- Excellent stability by self-calibration without user intervention
- Suitable for multiple types of sensors, single-mode fiber and weak reflective FBG arrays are suggested
- Shape sensing can be used for deformation measuring and space attitude tracking
- Length compensation function is helpful once the optical fiber length changed
- Customized services for additional parameter configuration
- Beside the standard size, portable version of OSI-D is optional

## Applications

- Structural health monitoring
- Composite material fatigue testing
- Strain and temperature testing for automobile structure
- Strain and temperature field reconstruction



## Parameters

Basic Parameters					
Sensing Length <sup>1</sup>	20				m
Spatial Resolution <sup>1</sup>	0.64 ~ 10.24				mm
Lead Length <sup>2</sup>	20 (50 or 100)				m
Sensor <sup>3</sup>	Various types of optical fibers				/
Specific Parameters					
Measurement Modes <sup>4</sup>	Mode 1	Mode 2	Mode 3	Customized Mode	/
Sensing Length	20	20	20	40 or 80	m
Rate <sup>5</sup>	40	100	60	10 ~ 20	Hz
Strain Accuracy	±4.0	±4.0	±1.0	±4.0	με
Temperature Accuracy	±0.4	±0.4	±0.1	±0.4	°C
Strain Range	±12000	±12000	±6000	±12000	με
Temperature Range <sup>6</sup>	-200~1200	-200~1200	-200~600	-200~1200	°C
Others					
Input Voltage	AC 220/110V; DC 12V				-
Power	60				W
Communication Interface	USB				-
Optical Fiber Connector	SC/APC				-
Standard Dimension	D385*W345*H165				mm
Standard Weight	7.5				kg
Portable Dimension	D275*W195*H160				mm
Portable Weight	4.75				kg
Storage temperature	0 ~ 50				°C
Operating Temperature	10 ~ 40				°C
Relative Humidity	<90				%RH

### Note:

1. The longest sensing length is 20m and each mode has appropriate sensing length with spatial resolution from 0.64mm to 10.24mm.
2. The length of lead fiber is 20m. Longer lead fiber can be extended to 50m or 100m.
3. Suitable for multiple types of sensors, single-mode fiber and weak reflective FBG arrays are suggested.
4. Customized Mode is not included in standard, if needed, please contact us.
5. Measurement rates are related to the numbers of the sensing point. The results are obtained under 10.24mm spatial resolution.
6. Temperature measurement range is related to the material property of optical fiber sensor. Acrylate optical fibers is used for 0°C~100°C, Polyimide optical fibers for 50°C~300°C and Au coated optical fibers for -200°C~700°C.