



## BIG – FBG Interrogator Series

### Features

- High precision interrogators, BIG-SM/DM/MM
- 1510 ~ 1590nm or 1525 ~ 1570nm wavelength
- 3nm sensor spacing, 27 sensors per channel
- Up to 400Hz for SM-series, up to 20kHz for DM-series
- Up to 16 optical channels for MM-series
- Wide dynamic range
- Ethernet or LVDS digital data interface
- Easy configuration with the dedicated software

It is a fact that optical sensors are far superior to electrical ones in all aspects but price because of the costly interrogator. However, when a massive number of sensors are deployed, the optical FBG sensor based interrogation becomes dramatically economical. The BIG series are high precision Interrogators, static, dynamic and multi-channel. The BIG-SM, BIG-DM and BIG-MM can scan a single or multiple channels of up to 27 sensors at 400Hz, 20kHz and 10Hz, respectively. Even the high speed BIG-DM family provides reliable measurements with a precise range of  $\pm 2\text{pm}$ , favored by those state-of-art DSP techniques that enable the BIG series to overcome performance limitations restricted by tradeoffs between speed and precision. The dedicated GUI software effectively visualizes the results measured by the BIG series. The viewer is so straightforward as to easily seize changes in measurement.

### Scan rates

As far as the scan speed is concerned, the BIG-DM is the right choice. It interrogates 4kHz up to 20kHz, but is available in single channel models. The BIG-SM provides a variety of choices with better precision;  $\pm 1\text{pm}$ , over the scan rate of 400Hz or less. Users can choose a scan rate of 100, 200 or 400Hz.

### Dedicated software

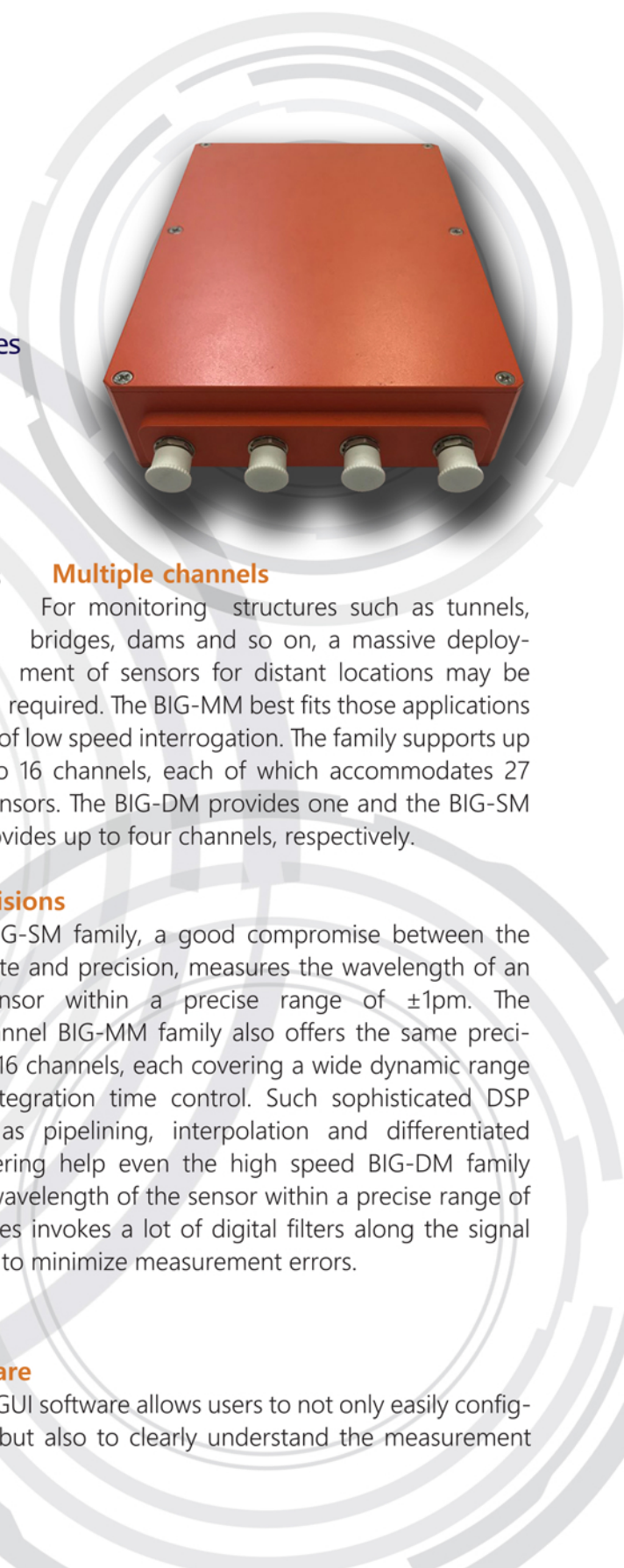
The straightforward GUI software allows users to not only easily configure the interrogator but also to clearly understand the measurement results.

### Multiple channels

For monitoring structures such as tunnels, bridges, dams and so on, a massive deployment of sensors for distant locations may be required. The BIG-MM best fits those applications of low speed interrogation. The family supports up to 16 channels, each of which accommodates 27 sensors. The BIG-DM provides one and the BIG-SM provides up to four channels, respectively.

### Precisions

The BIG-SM family, a good compromise between the scan rate and precision, measures the wavelength of an FBG sensor within a precise range of  $\pm 1\text{pm}$ . The multi-channel BIG-MM family also offers the same precision over 16 channels, each covering a wide dynamic range through integration time control. Such sophisticated DSP techniques as pipelining, interpolation and differentiated Gaussian filtering help even the high speed BIG-DM family measure the wavelength of the sensor within a precise range of  $\pm 2\text{pm}$ . The series invokes a lot of digital filters along the signal processing path to minimize measurement errors.





## Electrical specifications

Models	BIG-DM01	BIG-SM01/SM02/SM04	BIG-MM08/MM16
Wavelength	1525 ~1570nm	1510 ~ 1595nm	1510 ~ 1595nm
Optical channels	1	1,2 or 4	8 or 16
Sensors per channel	15	27	27
Scan rate	1 ~ 20kHz	100 ~ 400Hz	1 ~ 10Hz
Resolution	1.4pm	0.6pm	0.6pm
Precision	±2pm	±1pm	±1pm
Dynamic range	15dB	27dB	27dB
Interface	Optical : SC/APC or FC/APC Digital : DSUB9, RJ-45	Optical : SC/APC or FC/APC Digital : DSUB9, RJ-45	Optical : SC/APC or FC/APC Digital : DSUB9, RJ-45
Primary power	5VDC, 2A	5VDC, 1.5A	220VAC

## Dimensions & Weight

Models	BIG-DM01	BIG-SM01/SM02/SM04	BIG-MM08/MM16
Demension	130 X 185 X 40 mm <sup>3</sup>	SM01/SM02 : 130 X 185 X 40mm <sup>3</sup> SM04 : 130 X 185 X 40mm <sup>3</sup>	19inches/2U
Weight	910g	1000g	2000g

## Environmental specifications

Operating temperature	0 ~ +70°C or -40 ~ +70°C (with a heater)
Storage temperature	-40 ~ +85°C
Humidity	90% non-condensing

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