

# HIGH SPEED INTERROGATOR

## Deminsys



### Unique selling points

- High sampling frequency (20 KHz)
- Small Size
- Light weight
- Up to 4 optical channels
- 8 sensors per channel
- Compact and robust
- All solid state

### Product Description

Deminsys, the world's fastest multi sensor / multi channel FBG interrogator, identifies four channels with typically 8 sensors per channel.

The system is especially developed for the interrogation of signals up to 20 kHz for each sensor and the sample frequency is independent of the number of sensors.

The system is self calibrating meaning it can be coupled to pre-installed fibres in any construction.

A trade-off between the number of FBG's per fibre, sample frequency or the dynamic range gives the customer a more flexible interrogator.



Technobis Fibre Technologies reserves the right to make any changes in their specifications without prior notice.

© 2011 Technobis Fibre Technologies.

**TFT-FOS**  
Technobis Fibre Technologies  
Fibre Optic Sensing



POLYTEC GmbH  
Tel: +49 (72 43) 604 174

Polytec-Platz 1 - 7  
Fax: +49 (72 43) 6 99 44

D -76337 Waldbronn  
E-Mail: ot@polytec.de

GERMANY  
www.polytec.de

# HIGH SPEED INTERROGATOR



## Specifications

### Optical

- Wavelength of operation: 830 - 870 nm
- Number of optical channels: 1 - 4
- Maximum number of sensors per channel: 8
- Maximum sampling frequency: 20 kHz
- Wavelength repeatability:  $\leq 2$  pm
- Spectral spacing sensors: 5 nm
- Strain repeatability:  $\leq 3$   $\mu$ strain
- Signal noise: 0.015 pm/ $\sqrt{\text{Hz}}$
- Dynamic range: -1500/+2500  $\mu$ strain @ 32 sensors
- Dynamic range: -3000/+10000  $\mu$ strain (high performance fibres for specific information contact TFT)
- Optical connectors: E-2000-APC 0.1 dB

### Mechanical Deminsys Python

- Dimensions: 80 x 80 x 240 mm
- Weight: 1.0 Kg

### Mechanical Deminsys Ultra

- Dimensions: 70 x 70 x 130 mm
- Weight: 650 grams

### Mechanical Deminsys E Industrial

- Dimensions: 80 x 80 x 240 mm
- Weight: 1.0 Kg

### Environmental

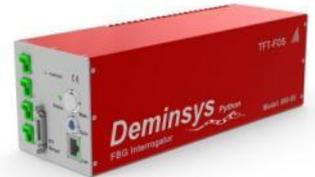
- Operating temperature: -15 °C to + 55 °C
- Operating altitude:  $\leq 15000$ ft
- Operating humidity: Non-Condensing
- Impact shock resistance: 200 G's
- EMI/EMC according to RTCA/DO-160-F (section 21, category B)
- Vibrations according to RTCA/DO-160-F (section 8.5, category S)

### Electrical

- Interface: Giga Ethernet
- Input voltage: 5 V
- Maximum power consumption:  $< 20$ W

### Applications

- **Deminsys E**, industrial applications, basic instrument
- **Deminsys Python**, medical and robotic applications, offering real-time, constant latency feedback output for control loops in haptic feedback applications.
- **Deminsys Ultra**, aerospace applications, offering smaller and lighter system and satisfies various environmental requirements stated in the RTCA/DO-160-F standard, which makes it suitable for research aircraftflights

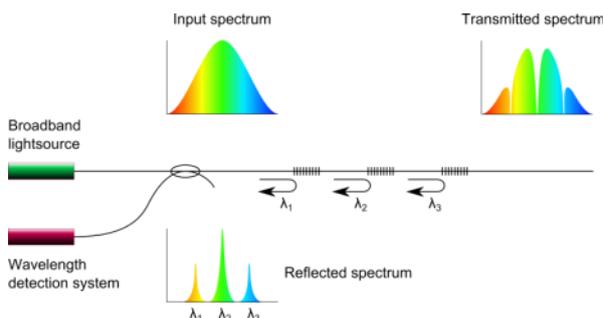


### How it works

The principle of Fibre Bragg Grating is shown in the image below. Broadband light enters the optical fibre. In a number of places, a grating is applied, a longitudinal periodic variation in the refractive index of the core of the fibre.

Each grating has a unique spacing that determines the wavelength to be reflected by the grating, which can then be detected at the end of the fibre where measurements are taken. Thermal or mechanical stresses cause strain variations in the fibre; the variations cause a varying period and with that a variation in the reflected wavelength.

The measured wavelength varies linearly with temperature and/or strain. By giving each grating its own period and thereby a unique reflection wavelength, every measuring point on the fibre can be distinguished in the detection process. This is one of the properties that makes multiplexing simple.



Technobis Fibre Technologies reserves the right to make any changes in their specifications without prior notice.

© 2011 Technobis Fibre Technologies.

All names mentioned in this datasheet are protected and may only be used in other publications with the explicit permission of their respective owners.



POLYTEC GmbH

Tel: +49 (72 43) 604 174

Polytec-Platz 1 - 7

Fax: +49 (72 43) 6 99 44

D -76337 Waldbronn

E-Mail: ot@polytec.de

GERMANY

www.polytec.de