



PCU-GEN1

interrogator unit for dynamic measurement of FSI sensors



- Sampling Frequency 205 kHz
- Resolution 20 nE
- Gratings per channel 20
- Spatial resolution from 10 mm to 20 m

PCU – GEN I

The Photonic Control Unit (PCU) GEN I is the first commercial interrogator for dynamic measurement of FSI sensors (Fiber Segment Interferometry). This interferometric instrument offers high resolution for deformation and temperature measurements over discrete and distributed sensing lengths. The ultra-high sampling frequency allows for acoustic, vibration and modal analysis. Compatible with 3D shape sensors.

How it works

The Photonic Control Unit (PCU) interrogates the sensing segments of the optical fibers with a laser. Because the light propagating through an optical fibre is affected by the surrounding environment, by measuring specific light parameters, one can reconstruct what happened to the fibre. It is possible to infer with extremely high accuracy the conditions of the structure under monitoring and its environment, if the fibre is integral with it (i.e., deformation, temperature, strain, displacement, pressure, etc.)



SPECIFICATIONS

Measurement system

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|--|---------------------------------|
| Number of Optical Channels | 4 |
| Number of Measurement Segments per Channel | 20 |
| Compatible Sensors | FSI sensors |
| Resolution | 20 $\mu\epsilon$ |
| Minimum Segment Length | 10 mm |
| Maximum Segment Length | 20 m |
| Maximum Distance between PCU and 1 st Segment | 1 km |
| Maximum Sampling Frequency | 205 kHz |
| Strain Range | 10 000 $\mu\epsilon$ |
| Data Output (Ethernet) | .csv (other formats on request) |

Mechanical, Environmental and Electrical

| | |
|--------------------------------|---|
| Dimensions | 398 x 370 x 86 mm |
| Operating Temperature | from 0 to 50 °C |
| Range Storage Temperature | from -20 to +70 °C |
| Range Maximum Humidity | 95 % non condensing |
| Data Connector | RJ45 Ethernet |
| Data Logging | Nova Analytica Application Software |
| Optical Connector | FC/APC |
| Input Voltage | 12 V (ripple specification: 120 mV p-p) |
| Power Consumption | 150 W |
| EMC Certification (CE marking) | CE/UKCA |

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