

## Optical Fibre Bending Sensor With Automatic Intensity Compensation

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### ABSTRACT

An extrinsic optical fibre bending sensor based on intensity modulation technique aimed for physiological application is presented. This sensing technique is capable of measuring the bending angle continuously in flexion, extension and lateral movements. The sensor working range is between  $-22^\circ$  and  $22^\circ$  with  $0.4^\circ$  accuracy and  $0.1^\circ$  resolution. From the theoretical estimation, the bending sensor automatically compensates for variation in the source intensity and various losses in the input and output fibres. The experimental results obtained in this investigation verified the theoretical finding. Among the advantages of the this optical bending sensor are being noninvasive, suitable for continuous measurement and immune from electromagnetic effects.

**KEYWORDS:** Bending sensor, health monitoring, intensitymodulation sensor, optical fibre sensor.

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