

ProcessGUARD

Laser integrated process monitoring for cutting, welding, and additive manufacturing



ProcessGUARD
Laser-Integrated Process Monitoring



ProcessGUARD integrates the photodiode-based plasmO process **observer** (pso) into the nLIGHT lasers. The process light is captured from the feeding fiber and transferred to pso 6.0 sensors (VIS Sensor 400-1100nm / NIR sensor 750-1800nm / 250kHz sampling rate). The photodiode sensors convert the process light to electrical signals that are evaluated in real time using mathematical algorithms.

Features

Welding

- Power / Focus Shift
- Contamination
- Misalignment
- Spatter
- Holes
- Pores
- Insufficient Penetration
- Gap
- Lack of Fusion
- Seam Undercut
- False Friend
- Thermal Effects, Shield Gas Distribution

Cutting

- Pierce Detection
- Loss of Cut
- Power / Focus Shift
- Process Drift Detection
- New Recipe Development

Additive Manufacturing

- Power / Focus Shift
- Deviating or Irregular Layer Thickness (PBF)
- Seam Thickness and Distance (DED)
- Process Drift Detection

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nLIGHT ProcessGUARD Specifications

Model	processobserver 6.0 (VIS/NIR)
Spectrum (nm)	VIS = 400 – 1100nm / NIR = 750 – 1800nm
Sampling rate	up to 250kHz
Digital I/O (24 V)	2 I/O per sensor
System interfaces	Digital I/O, DeviceNet, Ethernet IP, Profibus, Profinet, EtherCAT, etc.
Connection – Visualization – Analysis	database connection, rework visualization, statistical data analysis, Industry 4.0 ready

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sales@nlight.net | www.nlight.net

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