

## Inline Infrared Imaging Monitoring System for industrial processes (Laser & arc welding, LMD/cladding, WAAM, others)



Continuous monitoring and  
measurement of the melt pool  
and Heat-Affected-Zone geometry

ENSURES REAL-TIME MONITORING OF  
QUALITY PARAMETERS

ALLOWS COAXIAL INTEGRATION  
OR OFF-AXIS OPERATION

STANDALONE & REAL-TIME OPERATION

2 ALARM LEVELS CONFIGURATION  
PC DATALOGGING



## Specifications

Components	Infrared camera with real-time processing electronics and waterblock Connection box, multi I/O cable (3 m), power supply (24 VDC) Software package for system configuration, datalogging and log files analysis Infrared emitter for optical calibration
Process compatibility	Laser and arc welding, LMD, cladding, WAAM, others
Mechanical integration	Coaxial & off-axis operation
Laser optics compatibility (coaxial integration)	Transmission of infrared signal (above 1.1 $\mu\text{m}$ ) from the process area to the optical port is required*
Output	Analog signal output (0 VDC - 10 VDC) proportional to width of melt pool / HAZ Configurable span
Dimensions (mm)	Infrared camera: 88 mm x 60 mm x 92 mm Connection box: 124.5 mm x 102 mm x 28 mm
Weight	0.5 kg
Power supply	24 VDC, 6 W Power supply included
Imaging lens	CaF <sub>2</sub> , f=50 mm, F#2.25 with manual focus mechanism (other focal lengths available)
Mechanical enclosure (camera)	IP67 rated mechanical enclosure with embedded heatsink Embedded waterblock for air /water cooling
Mechanical interface (front side of optics)	C-mount thread with counterthread for tight adjustment
Field of view Resolution per pixel	Coaxial: dependent on the optical system installed in the laser optics Offaxis: FoV=3.7°x3.7° (focal length f=50 mm)
Infrared camera	VPD PbSe camera, 64x64 pixels (pixel size: 50 microns) MWIR response (1 -5 $\mu\text{m}$ ), frame rate 1000 images per second
Communication interface	Gigabit Ethernet (RJ-45)
Software	I3MS Acquisition and Configuration SW v.1.0 NIT Visualization SW v.2.1
Minimum requirements	PC with processor i5, RAM memory: 8 GB Hard disk available: 1 GB, O.S.: Windows 10 or later (32/64 bits)
Process monitoring configuration	Selectable configurations: Manual, Tracks, Continuous Track length (Tracks mode), Alarm levels, Alarm delay Laser ON delay & autodetection
Indicators	Melt pool / HAZ width, Infrared image, Laser status Alarm (2 configurable alarm levels)
Other features	Laser ON/OFF digital input (optocoupled) Monitoring alarm digital output (optocoupled) Process data logging, Circular & rectangular Region-Of-Interest (ROI)
Accessories	3-color light pole indicator

\*The performance of the system may be limited if additional optical components are installed in the optical path.