

RECONFLEX™ 1920NA / 800NA

High-Speed NIR Camera for Real-Time Welding Process Monitoring

FEATURES

- Ultra-High NIR Sensitivity @ 1000nm, optimized for weld pool emission, allows to penetrate arc plasma to reveal underlying weld geometry
- Simultaneous visualization of arc brightness and subtle weld pool details in single frame with 140dB dynamic range with flexible tone mapping
- Integrated 7-point spline tone mapping for custom per-application visualization with the microsecond-synchronized multi-camera software
- Automated thermal zone detection, weld pool boundary identification, travel speed validation with real-time parameter extraction

TYPICAL APPLICATIONS

- Penetration & weld pool geometry verification
- Arc stability monitoring and plasma analysis
- Real-time defect prediction and prevention
- Multi-pass weld quality control and inter-pass temperature monitoring
- Robotic welding cell integration and closed-loop process optimization

PRODUCT OVERVIEW

The ReconFlex™ 1920NA and 800NA are two-part high-speed NIR CMOS camera systems specifically engineered for inline welding process monitoring.

The sensor head with its C-mount thread is separated from the electronics enclosure (with integrated 16-bit ADC) by a 1m connection cable.

With extreme dynamic range (up to 140dB) and ultra-high sensitivity at 1000nm, these cameras enable real-time visualization through the arc plasma while capturing weld pool dynamics, thermal distribution, and process parameters.

DIMENSIONS

Electronics enclosure size: 100mm (W) x 100mm (D) x 75mm (H)

TECHNICAL SPECIFICATIONS

PARAMETER	ReconFlex™ 1920NA	ReconFlex™ 800NA
Sensor Technology	CMOS, Global Shutter	CMOS, Global Shutter
Optical Format	2/3"	1/1"
Resolution	1920 × 1440 (2.8MP)	800 × 600 (0.48MP)
Pixel Size	4.5µm × 4.5µm	4.5µm × 4.5µm
Peak Sensitivity	1000nm (NIR)	1000nm (NIR)
Spectral Range	700–1400nm	700–1400nm
Dynamic Range (native)	80dB	80dB
Dynamic Range (HDR Mode)	up to 140dB	up to 140dB
Max. Frame Rate (8-bit)	409fps (full frame)	1000+fps (RoI)
Max. Frame Rate (12-bit)	231fps (full frame)	650+fps (RoI)
Read Noise	≤ 3e ⁻	≤ 3e ⁻
Saturation Capacity	25,000e ⁻	25,000e ⁻
SNR	40dB	40dB
Exposure Time	4µs – 200ms (up to 10s)	4µs – 200ms (up to 10s)
Output Formats	8-bit or 12-bit (raw or subset)	8-bit or 12-bit (raw or subset)
ADC Input (external)	±10V, 16-bit	±10V, 16-bit
Data Interfaces	USB 3.0 + 1 GigE Ethernet	USB 3.0 + 1 GigE Ethernet
Trigger I/O	TTL (SMA connectors)	TTL (SMA connectors)
Lens Mount	C-mount	C-mount

SOFTWARE SUITE

Optimized ReconFlex™ Welding Camera Software
Advanced Tone Mapping: 7-point spline for custom per-application visualization
Automatic Frame Rate Control: adaptive to exposure time
Microsecond Synchronization: multi-camera timestamps with sub-microsecond precision
Real-Time Parameter Extraction: thermal zone detection, pool boundary ID, travel speed validation

INCLUDED ACCESSORIES

Sensor head connection cable (1m)
2x SMA-to-BNC adapter cables (1m)
USB 3.0 and Ethernet cables
5V AC power supply
Device drivers for Windows 10+ (Linux on request)

COMPLIANCE & CERTIFICATIONS

2011/65/EU
2014/30/EU
2014/35/EU
(EU) 2015/863
(EU) 2017/2101

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