

FireEye™ state-of-the-art industrial color camera

The “FireEye” furnace and cooler color camera provides state-of-the-art supervision for industrial high temperature process scenarios. It consists of a digital color imager (analog optionally available) for CCTV monitoring and delivers great visual details of the process conditions to the operator. The rugged industrial solid-state sensors have the advantage of no “moving system parts”.

The FireEye sensor module is mounted to the “process wall” through an air-cooled mounting flange with optional ball-head for flexible adjustment. Normally no additional water cooling is required. An air-cooled housing ensures safe operation even under the most demanding installation conditions. The scenario is “observed” via customized short optics of advanced design.



The video signal is available via MJPEG stream/GigE over CAT7 or fiber optic cable (up to 2km). A full turnkey solution includes the transmission to the smart Data-Acquisition-Controller “xDAC” that is usually located in the process control room or nearby. This displays the video in real time.



The FireEye design features following advantages:

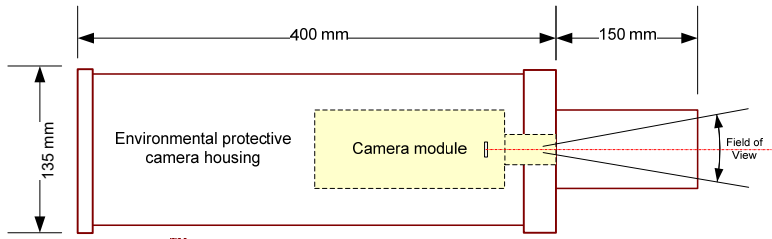
- **Real-time image** through **computer-optimized optics**:
 - Excellent image **quality**.
 - Several narrow fields of view available
- **Reduced maintenance** cycles and efforts
- **Simple** handling, cleaning and troubleshooting
 - Rugged housing design protects delicate electronics while open
 - Even adjustable **in operation!**
- **Lightweight**, Easy to dismount and transport for repair, inspection or storage
- **Upgradable to premium PyroViper** models through compatible interfaces.

Furthermore, the flexible design includes enhanced and customizable sensor features:

- Additional sensors (pressure, temperature, humidity, vibration ...) can be built into the housing to fit your needs under request for a price premium

5 year on-line support of our engineer team via telephone and email free of charge!

Advantages of FireEye™ against conventional surveillance cameras	Industrial Process
Optimized design for uninterrupted operation, low wear and minimum maintenance efforts Fully configurable from the control room Flexible adjustment of the pointing direction	Cement- & lime- production. Waste burning, cement clinker coolers
A typical FireEye™ system configuration consists of the following basic components	
Industrial color imager for scenario monitoring. Air cooled industrial IP65 housing with “quick change protection shroud and air supply connectors”. Stainless steel protection shroud serving simultaneously as mechanical interface. Air-cooled furnace welding flange and ball-head for mounting and adjusting the field of view Power supply with optional data interface and air-conditioning components Smart sensor data acquisition controller with industrial Ethernet-LAN connectivity & dual video output for UXGA color monitors.	



FireEye™ camera module (main components) total weight 6,5 kg



FireEye™ industrial furnace camera for color image monitoring

Focus range	Typical: fixed between 0.3m and infinity. Enhanced: depth of focus from <1m to infinity
Built-in color imager	Analog and digital modules: high performance industrial solid state CCDs or CMOS
Imager resolution	Analog modules: up to 600 horizontal TV lines (752H x 582V effective pixels). Digital module options: between 320 x 240 and 1600 x 1200 effective pixels
Imager field of view (FOV)	Typical narrow field of view ~5° horizontal. Up to 20° horizontal tailored solutions.
Imager angle of view (AOV)	Standard AOV is “straight ahead”
Video signal output	Analog modules: 1V p-p, 75 Ohms, RS-170/CCIR Digital modules options: IEEE1394 (FireWire), Gigabit Ethernet (“GigE”), custom
Video frame/field rate	Analog modules: 25/50Hz (PAL), 30/60Hz (NTSC) Digital modules options: between 5Hz and 100Hz (depending on sensor type & resolution)
Video SNR (signal to noise ratio)	Depending on model 55-63dB (DNR on) and 50-59 dB (DNR off)
Power requirements	12VDC +/-10%, max. 6.0W
Dimensions	550mm length (custom upon request), 135mm housing diameter, 60mm probe diameter
Weight	6.5kg typical
Materials	High temperature stainless-steel and aluminum
Protection rating	IP65 while in operation (pressurized housing)
Environment	Continuous inner furnace operating temperature up to 1800°C protected with an open-cycle air shroud made of stainless steel or ceramics Option: additional closed-cycle water cooled mounting flange made of stainless steel Furnace surrounding ambient air temperature up to 80°C Option: Vortex cooler for ambient air temperature up to 150°C or pressure air temperature above 40°C Outer furnace wall temperature up to 500°C with standard cooling (probe+mounting flange)
Camera purging & cooling	Instrument-quality pressure air: typical 10-35Nm ³ /h at 0.2-0.4 MPa (depending on site conditions)
Mounting flange cooling	Pre-filtered ambient air: 50-200Nm ³ /h at 0.02-0.05MPa (e.g. with a 1.5kW air blower) Water cooling option: 10-50 liters per minute at dT=50°C
Wall box mounting interface	Standard clamp jaw for fixed mounting. Optional slide track flange/block for auto-retraction

FireEye™ accessories and options

Customized optics/optical filters & digital sensors adapted to the application for optimized image quality
High performance air- filtration/distribution system, automatic retract assembly, air blower
Heavy- duty furnace welding flange & air-cooled protection pipe, ball-head mount, etc.
R etract- and S ensor C ontrol U nit “ RESC-U2 ”: Sensor power supply, video & control signal conditioning
S ignal processor I/O unit: Video & control signal conditioning, status & alarm signal I/O, interface to process control systems (PCS)
Isolated video & control signal transmission via fiber-optic cable up to 2000m (video transmission via CAT6 or coax cable <100m)