

**Thermal imager with BI-SPECTRAL technology**



**Important Features**

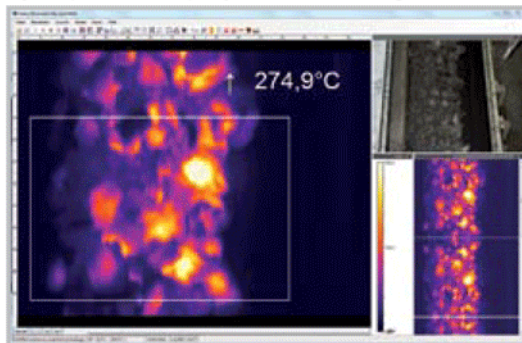
- BI-SPECTRAL technology
- Thermal images in real time with up to 128 Hz (160 x 120 pixel)
- Time synchronic visual image recording with up to 32 Hz (640 x 480 pixel)
- Extensive license-free analysis software inclusive
- Low-light-level technology of visual camera
- Small design (Size: 45 x 45 x 62 mm)
- Thermo Analysis Package incl. 3 lenses (optional)

**BI-SPECTRAL technology**

With the help of BI-SPECTRAL technology, a **visual image (VIS)** can be combined with a **thermal image (IR)**. Both can be finally captured time synchronously:

**Monitoring modus:**

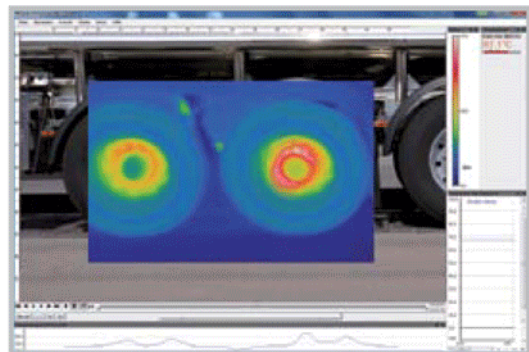
Easy orientation at point of measurement by separate display of visual image



Monitoring of coal on conveyor belt

**Cross-fading modus:**

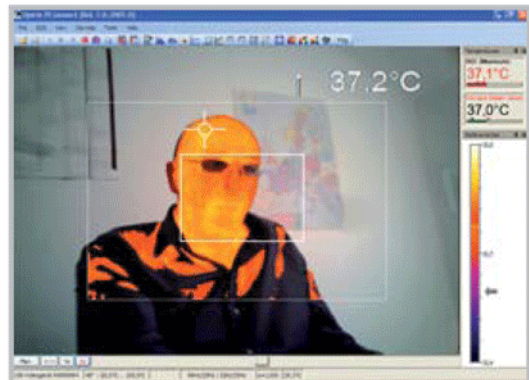
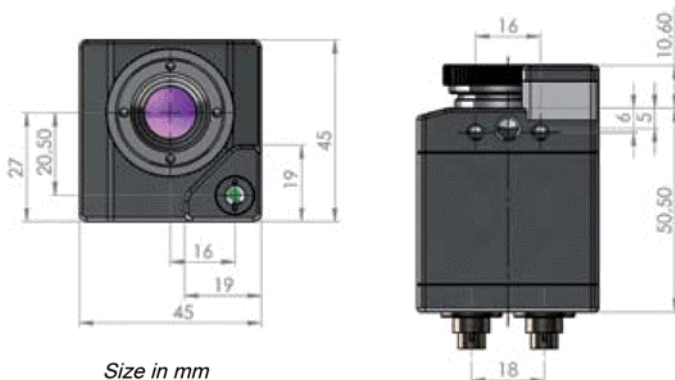
Highlighting of critical temperatures by cross-fading (0...100% transparency) ...



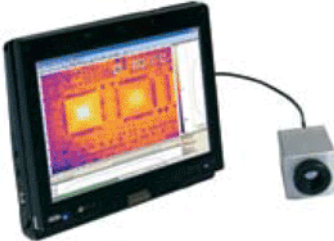
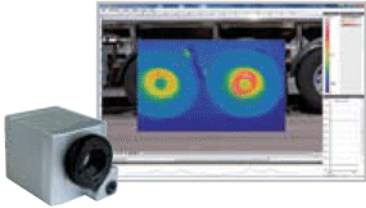
Measurement of break temperature in cross-fading modus

... or by cross-fading defined temperatures (thresholds)

**Two cameras in one compact device**



Cross-fading of VIS image above temperatures of 35°C

Basis model	IR 160	IR 200 / IR 230
Type	IR	BI-SPECTRAL
		
Scope of supply	USB camera incl. 1 lens, USB cable (1 m), table tripod, PIF cable incl. terminal block (1 m), software package optris PI Connect, aluminum case	USB camera with 1 lens and BI-SPECTRAL technology, USB cable (1 m), table tripod, focussing tool, PIF cable incl. terminal block (1 m), software package optris PI Connect, aluminum case
Detector	FPA, uncooled (25 µm x 25 µm)	FPA, uncooled (25 µm x 25 µm)
Optical resolution	160 x 120 pixel	160 x 120 pixel
Spectral range	7.5 - 13 µm	7.5 - 13 µm
Temperature ranges	-20°C...100°C, 0°C...250°C, 150°C...900°C, additional range: 200°C...1500°C (option)*	-20°C...100°C, 0°C...250°C, 150°C...900°C, additional range: 200°C...1500°C (option)*
Frame rate	120 Hz	128 Hz***
Optics (FOV)	23° x 17° FOV / f = 10 mm <u>or</u> 6° x 5° FOV / f = 35.5 mm <u>or</u> 41° x 31° FOV / f = 5.7 mm <u>or</u> 72° x 52° FOV / f = 3.3 mm	23° x 17° FOV** / f = 10 mm <u>or</u> 6° x 5° FOV / f = 35.5 mm <u>or</u> 41° x 31° FOV** / f = 5.7 mm <u>or</u> 72° x 52° FOV / f = 3.3 mm
Thermal sensitivity (NETD)	0.08 K with 23° x 17° FOV / F = 0,8 0.3 K with 6° x 5° FOV / F = 1,6 0.1 K with 41° x 31° FOV and 72° x 52° FOV / F = 1	0.08 K with 23° x 17° FOV / F = 0,8 0.3 K with 6° x 5° FOV / F = 1,6 0.1 K with 41° x 31° FOV and 72° x 52° FOV / F = 1
Option for visual camera (only for BI-SPECTRAL camera)	-	Optical resolution: 640 x 480 Pixel, Frame rate: 32 Hz*** Optics (FOV): 54° x 40° (PI 200), 30° x 23° (PI 230)
Accuracy	±2°C or ±2%	±2°C or ±2%
PC interface	USB 2.0	USB 2.0
Process interface (PIF)		
Standard PIF	0-10V input, digital input (max. 24V), 0-10V output	0-10V input, digital input (max. 24V), 0-10V output
Industrial PIF	2x 0-10V inputs, digital input (max. 24V), 3x 0-10V outputs, 3x relay (0-30V/ 400mA), fail safe relay	2x 0-10V inputs, digital input (max. 24V), 3x 0-10V outputs, 3x relay (0-30V/ 400mA), fail safe relay
Ambient temperature (T <sub>Amb</sub> )	0°C...50°C	0°C...50°C
Storage temperature	-40°C...70°C	-40°C...70°C
Relative humidity	20 - 80%, non condensing	20 - 80%, non condensing
Enclosure (size / rating)	45 mm x 45 mm x 62 mm / IP 67 (NEMA 4)	45 mm x 45 mm x 62 mm / IP 67 (NEMA 4)
Weight	195 g, incl. lens	215 g, incl. lens
Shock / vibration	25G, IEC 68-2-29 / 2G, IEC 68-2-6	25G, IEC 68-2-29 / 2G, IEC 68-2-6
Tripod mount	1/4-20 UNC	1/4-20 UNC
Power supply	USB powered	USB powered

### The IR 160 / IR 200 as Thermal Analysis Package

- Infrared camera
- 3 lenses (23°, 6°, 41°) incl. calibration certificate
- USB cable (1 m and 10 m)
- Table tripod (20 - 63 cm)
- PIF cable with terminal block (1 m)
- Software package IR Connect
- Aluminum case



\* The additional measurement range is not available for 72° HFOV optics

\*\* For ideal combination of IR and VIS image, a 41° HFOV lens is recommended (IR 200). For the IR 230, a 23° HFOV lens is recommended.

\*\*\* The following options can be set:  
Option 1 (IR with 96 Hz at 160 x 120 px; VIS with 32 Hz at 640 x 480 px)  
Option 2 (IR with 128 Hz at 160 x 120 px; VIS with 32 Hz at 596 x 447 px)