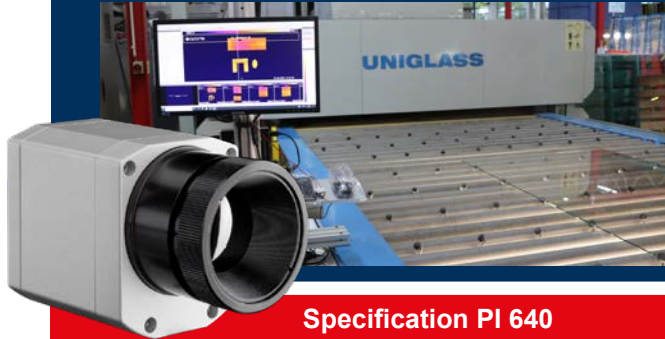


Glass inspection system for process control in glass tempering machines



Features

- Top down system with additional reference pyrometer from underneath for automatic emissivity correction on standard and Low-E glasses
- Digitally controlled lens protection system (DCLP) avoids extra air purging
- Glass area calculation
- Pre-assembled system for easy installation on glass tempering furnaces
- Automatic scan line adjustment – insensitive to distortions

Specification PI 640

Optical resolution	640 x 480 pixels
Detector	FPA, uncooled (17 μm x 17 μm)
Spectral range	8 – 14 μm
Temperature ranges	-20 ... 100 °C, 0 ... 250 °C, (20) 150 ... 900 °C ¹⁾ -4 ... 212 °F, 32 ... 482 °F, (68) 302 ... 1652 °F ¹⁾
Frame rate	32 Hz / 125 Hz @ 640 x 120 pixels
Optics (FOV)	60° x 45° FOV / f = 10.5 mm (f=0.4 in) or 90° x 66° FOV / f = 7.7 mm (f=0.3 in)
Thermal sensitivity (NETD)	75 mK
Accuracy	±2 °C or ±2 % (±3.6 °F or ±2 %), whichever is greater
PC interface	USB 2.0 / optional USB GigE (PoE) interface
Process interface (PIF), industrial	2x 0–10 V input, digital input (max. 24 V), 3x 0/4–20 mA output, 3x relay (0–30 V / 400 mA), fail-safe relay
Ambient temperature	0 ... 50 °C (32 ... 122 °F)
Relative humidity	20–80 %, non-condensing
Enclosure (size / rating)	46 x 56 x 76 – 100 mm [1.8 x 2.2 x 3.0 – 3.9 in] (depending on lens + focus position) / IP 67 (NEMA)
Weight	269 - 340 g (10.59 - 13.38 oz), depending on lens
Shock / Vibration ²⁾	IEC 60068-2-27 (25G and 50G), IEC 60068-2-6 (sinus shaped), IEC 60068-2-64 (broadband noise)

Specification reference sensor CT G5L

Temperature range	100 ... 1200 °C (212 ... 2192 °F)
Spectral range	5 μm
Optical resolution (90 % energy)	10:1
System accuracy (at T _{Amb} 23 ±5 °C [73 ±9 °F])	±2 °C or ±1 % (±3.6 °F or ±1 %) ³⁾
Repeatability (at T _{Amb} 23 ±5 °C [73 ±9 °F])	±0.5 °C or ±0.5 % (±0.9 °F or ±0.5 %) ³⁾
Temperature resolution (NETD)	0.1 K
Response time (90 % signal)	120 ms
Emissivity/ Gain (adjustable via programming keys or software)	0.100 – 1.100
Environmental rating	IP 65 (NEMA-4)
Ambient temperature	-20 ... 85 °C [-4 ... 176 °F] (sensing head) 0 ... 85 °C [32 ... 176 °F] (electronics)
Storage temperature	-40 ... 85 °C [-40 ... 176 °F] (sensing head) -40 ... 85 °C [-40 ... 176 °F] (electronics)
Vibration (sensor)	IEC 68-2-6: 3 G, 11–200 Hz, any axis
Shock (sensor)	IEC 68-2-27: 50 G, 11 ms, any axis
Weight	42 g (1.5 oz) (sensing head) 420 g (14.8 oz) (electronics)

Cable length

Electrical cabinet to PI imager (USB, PIF, Shutter)	10 m (32.8 ft)
Electrical cabinet to reference sensor (CT G5 head cable, Shutter)	10 m (32.8 ft)
Electrical cabinet to remote control box	10 m (32.8 ft)
Ethernet, Cat. 6	10 m (32.8 ft)

¹⁾ Accuracy effective starting at 150 °C (302 °F)

²⁾ For more details see operator's manual

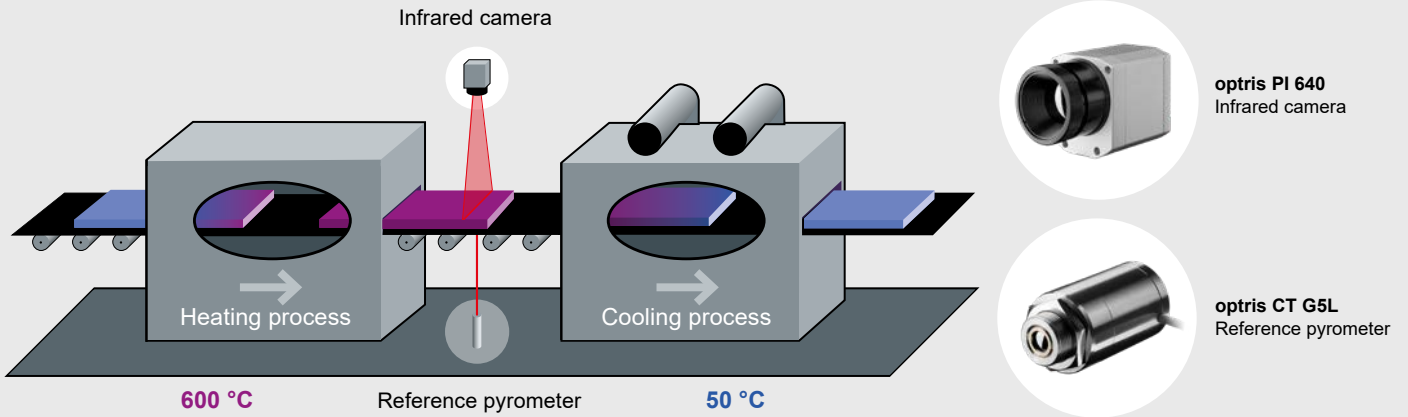
³⁾ Whichever is greater

Scope of supply Top Down GIS 640 R

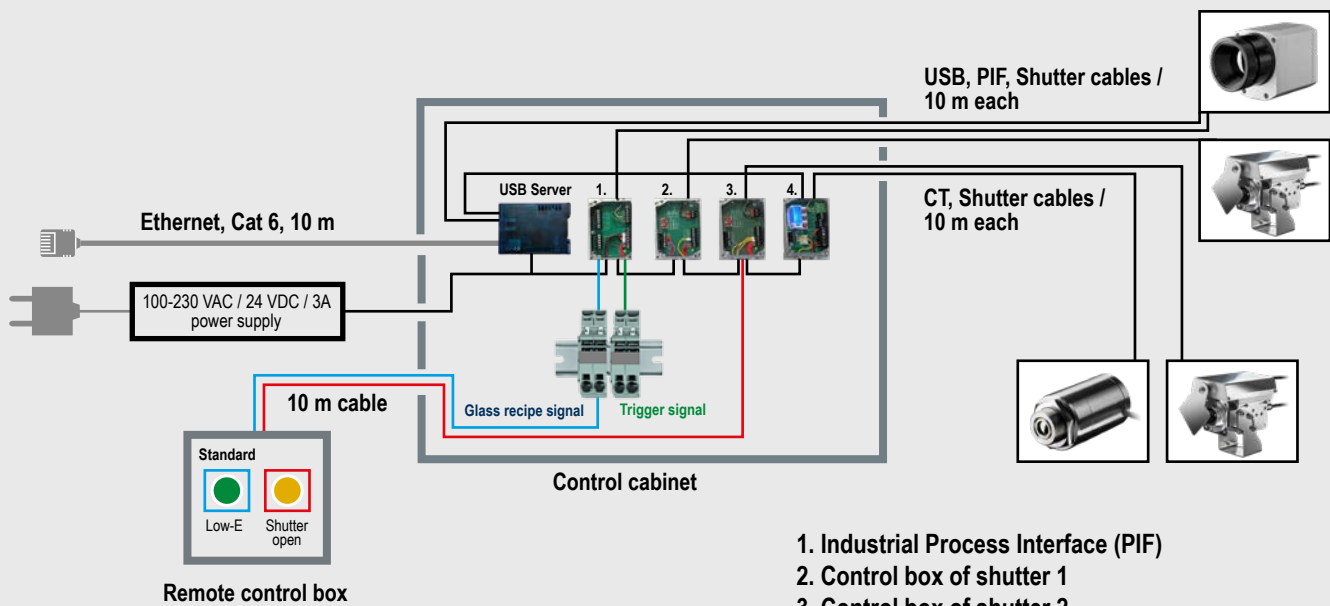
- PI 640 imager with 60° or 90° FOV
- Industrial Process Interface
- CT G5L reference sensor with USB interface and calibration certificate
- DCLP Shutter system with mounting brackets for imager and reference sensor
- USB Server Gigabit
- Control cabinet
- Cable set
- Remote control box
- Software package
- 100-230 V AC / 24 V DC power supply for initial start-up

optris Top Down GIS 640 R

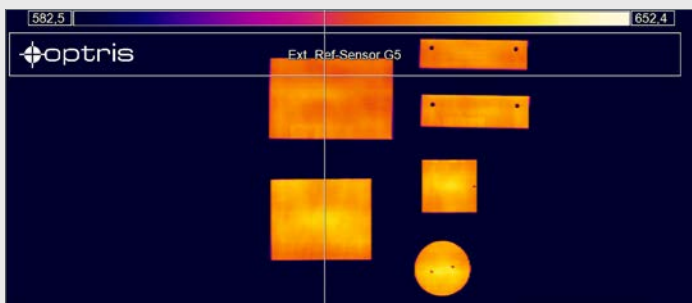
Measurement principle



System overview

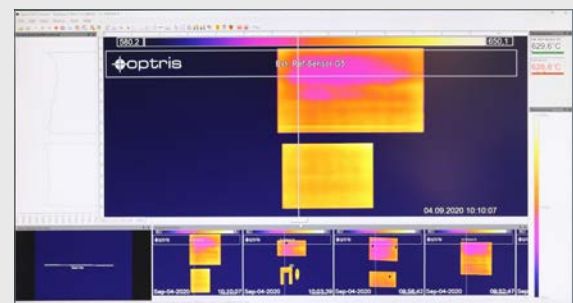


Thermal image



Monitoring temperature values of different glass sheets

Software PIX Connect



Line scan function with PIX Connect