Non-Contact Temperature Measurement with Optix

Portable radiation pyrometer with through-the-lens sighting in spectral and two-colour versions

Easy and quick temperature measurements ranging from +250 °C to +2500 °C.

- **Optix G**
  +250 to +2000 °C
- **Optix S**
  +600 to +2500 °C
- **Optix Q**
  Two-colour pyrometer
  +700 to +2400 °C

KELLER H.C.W.
MESSEN · STEUERN · REGELN

The Non-contact Infrared Thermometer Optix

With through-the-lens sighting for accurate measurements

- for great distances
- of small objects
- through sighting tubes

Features of the Optix Series

- Measures temperatures from +250 °C to +2500 °C in partial ranges
- 9 different models
- Available as a spectral or two-colour version
- Focusable, interchangeable lenses
- Microprocessor control
- Wide field of view
- Through-the-lens sighting device displays temperature within the viewfinder
- Dust-tight and water-proof aluminium enclosure (rated IP 65) for industrial applications
- RS 232 digital interface
- Stores up to 200 readings
- Distance ratio up to 240 : 1
- Based on light sensor technology; contains no mechanical moving parts
- Non-wearing, non-maintenance

Two-colour version

- Switchable between spectral and two-colour measuring methods

Focusable Interchangeable Lenses

Optix pyrometers are equipped with various focusable, interchangeable lenses. Depending on the specific application, the user can select from a variety of lenses to adapt the pyrometer to almost every measurement task. Even targets at great distances can be brought into focus.

Multifunctional Display

The external LC-display shows the temperature reading and leads the user through the menues for setting parameters and using the memory function and interface.

Digital Interface RS 232

Optix pyrometers are standardly equipped with an RS 232 interface which enables instantaneous values as well as up to 200 stored temperature readings to be transferred to a chart recorder, printer or PC.

Through-the-lens Sighting with Internal Temperature Display

Through-the-lens sighting with a target marker and diopter compensation provides a laterally correct, parallaxfree image, making it easy for the user to pinpoint the exact measurement target.
The temperature reading is displayed in the external LCD as well as within the sighting device.

Industrial Design

Optix is designed to be used under extreme environmental conditions. The instrument´s rugged aluminium enclosure provides excellent mechanical strength.

Electromagnetic Compatibility

The digital electronics are highly immune to electromagnetic interference and comply with EU directives EN 50081-2 and 50082-2. Even in environments of intense radiation, Optix will continue to provide error-free temperature readings.

Min/Max Memory

Even at discontinuous processes, or when the material measured possesses an uneven temperature distribution or an irregular surface, the min/max memory function enables the user to obtain a reliable temperature reading. The minimum and maximum values are continuously updated and stored to memory and can be recalled and displayed after the measurement.

Memory Function

All Optix pyrometers are equipped with a built-in memory function to store up to 200 readings. For each data point, the instrument saves either the minimum, maximum or instantaneous value along with its selected emissivity adjustment.
The stored data can be transferred to a PC for further analysis and archiving.
The data logger function enables the recording of temperature profiles with an adjustable time interval.

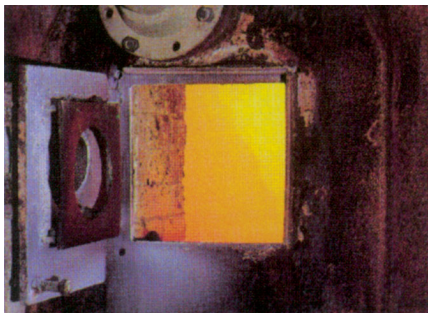
Emissivity Adjustment

The intensity of the infrared radiation depends not only on the temperature but also on the material and its surface. Optix provides an emissivity adjustment feature to adapt the instrument to the specific target emissivity and thus obtain an accurate temperature reading.

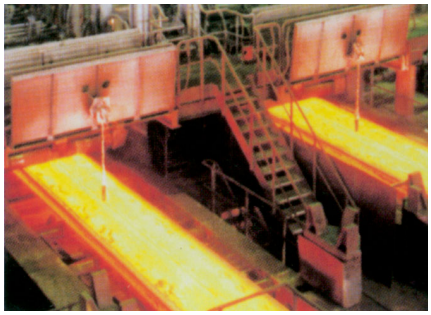
Variety of Functions

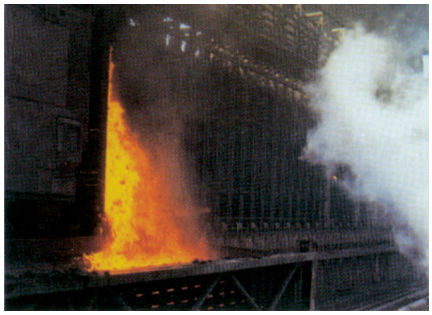
In addition to the hold function, an automatic switch-off, a battery check and a self-test, Optix features continuous monitoring of its own internal temperature.

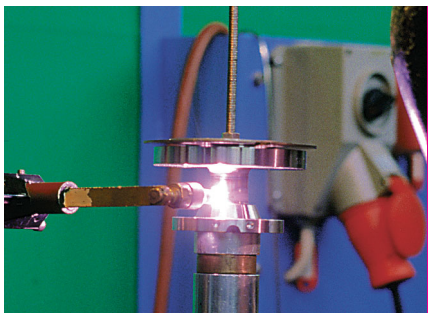
Applications

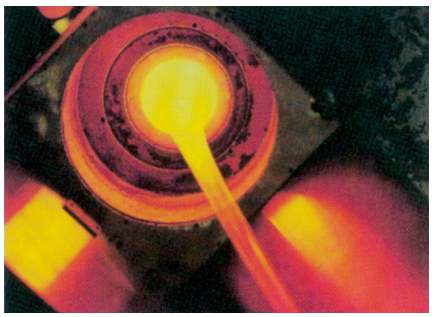

Furnaces


Rotary kiln


Slabs


Coking plant


Welding processes


Glass industry

3 Basic Versions

The Optix Series provides highly-capable, microprocessor-controlled pyrometers. These three versions look and function identically; they merely differ with respect to temperature range, measuring method and target diameter.

Optix G (PT 50):
With a range from +250 °C to +2000 °C the main applications for the Optix G are in the steel, glass, ceramic and chemical industries.

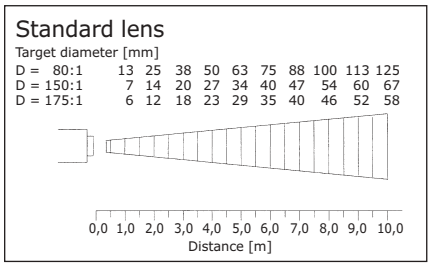
Optix S (PT 60):
For temperatures from +600 °C to +2500 °C the Optix S is often used in the steel, glass, ceramic and chemical industries.

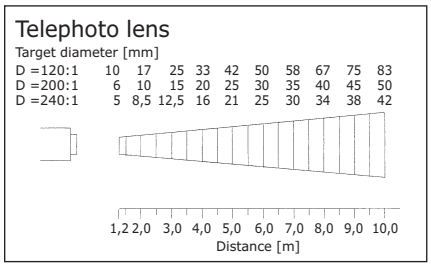
Optix Q (PT 70):
The Optix Q two-colour pyrometer with a range from +700 °C to +2400 °C is essential for measuring the temperature of molten iron and for applications where the influence of dust, steam and changing emissivities must be eliminated.

Technical Data

	Optix G	Optix S	Optix Q	
Type	PT 50	PT 60	PT 70 (two-colour version)	
Range	+250 to +2000 °C	+600 to +2500 °C	+700 to +1600 °C	+900 to +2400 °C
Lens type (focal range)	Distance ratios of the focusable interchangeable lenses			
Standard lens (0.4 m to ∞)	AF1: 150:1	AF1: 175:1	AF1: 80:1	AF3: 150:1
Telephoto Lens (1.2 m to ∞)	F2: 200:1	AF2: 240:1	AF2: 120:1	AF4: 240:1
Sensor	photodiode	photodiode	double-photodiode	
Spectral sensitivity	1.1 to 1.7 µm	0.8 to 1.1 µm	0.95/1.05 µm	
Uncertainty (at ε=1 and Tu=+23 °C)	4 K or 0.5 % of reading (<1500 °C) whichever is greater; 0.75 % of reading (>1500 °C)		1 % of reading	
Temperature coefficient (deviation to Tu=+23 °C)	0.25 K/K (for T <500 °C) 0.05 %/K (for T ≥500 °C) of reading/K		0.07 %/K of reading/K	

Target diagram





Common technical data

Repeatability:	1 K +1 Digit
Response time t_{90}:	≤1 sec
Display:	4-digit LC-Display external and within the sighting device
Resolution:	1 K
Ambient temperature:	-10 to +50 °C
Storage temperature:	-20 to +60 °C
Protection rating:	IP 65 according to DIN 40050
Dimensions:	(B x H x T) 155 x 70 x 174 mm
Housing:	Aluminium
Sighting device:	Through-the-lens sighting with target marker and diopter compensation provides laterally correct, parallax-free image
Optics:	Focusable interchangeable lenses
Power supply:	a) Built-in rechargeable batteries b) Plug-in power supply for 230 V AC
Memory:	Internal storage for 200 readings
Data transfer to the PC:	RS 232 (4800 baud, 8 databits, 1 stopbit, no parity)
Linearisation:	Digital by microcontroller; deviation by linearization < 1 K
Further functions:	- Adjustable emissivity from 10 to 100 % - Stores min. and max. values - Stores up to 200 readings in memory - Datalogger function
Standard accessories:	- Plug-in power supply - Carrying strap - Lens protection cap - PC-connecting cable incl. software for Windows 95, Windows NT - Instruction manual
Optional accessories:	- Calibration certificate according to ISO 9001; reference pyrometer PTB certified - Hard carrying case - Tripod

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