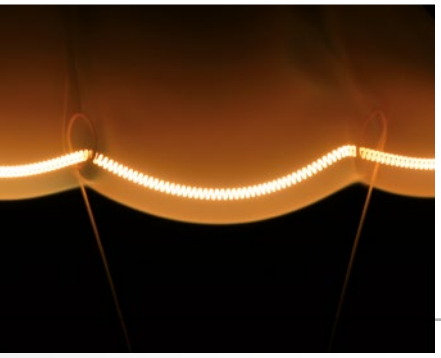
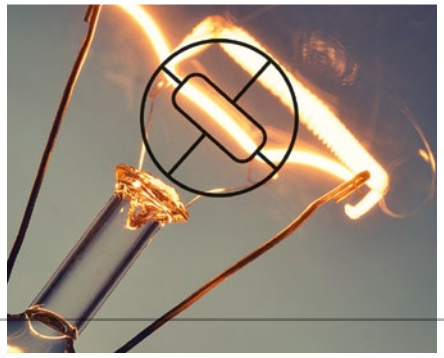
KELLER

infrared temperature solutions ITS

No 1 in terms of ACCURACY RELIABILITY INNOVATION





Application
Measurement of filaments

Temperature measurement of very small objects, such as various types of filaments, with panorama pyrometers®

Description of the application

The coil temperature of filament lamps and X-ray tubes and the strip temperature of cathode ray tubes or mass spectrographs is a process-relevant measure to check radiation characteristics, to study aging effects or to control heating systems.

Intensity comparison pyrometer

Due to the small size of objects, accurate temperature measurements in the past could only be made with intensity comparison pyrometers. By looking through the lens at the target object, the user compares and harmonises the colour (intensity) of a calibrated reference marker with the object colour.

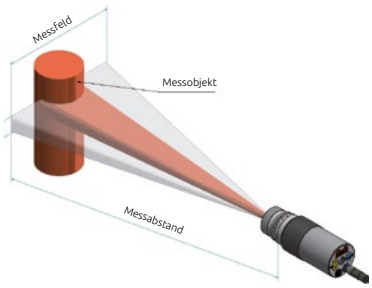
The advantage of this measuring method is a low sensitivity to changes in the radiation property of the measurement object. The measure is therefore more accurate. In addition, the measurement does not directly depend on the size of the target object and can even be made from a long distance. The disadvantage of this measurement method is the manual and time-consuming adjustment procedure. An automatic control of heating systems is impossible.

Electronic pyrometers

The optical systems of modern electrical pyrometers must have excellent imaging qualities and a very high spatial resolution to measure the temperature at very small objects. Required are objective lenses with broadband-corrected multi-lens systems to ensure the exact correspondence of the measurement area of the infrared measurement with the field of vision of the sighting device.

An electronic pyrometer automatically measures the temperature of coiled filaments. It evaluates and uses the reading as a correcting variable for controlling heating systems. The readings can be continuously recorded and analysed afterwards for metrological studies, e.g. to determine aging effects or the radiation characteristics of different coil geometries.

Solution



The two-colour pyrometer CellaTemp PA 43 was developed to solve this measurement task. This device is a so-called panorama pyrometer® with a rectangular measurement area. Thanks to the two-colour measurement principle the target object may even be smaller than the measurement area. A hot wire may move freely within the measurement area.

Compared to a device with a circular measurement area, panorama pyrometers® are much easier to adjust to smaller target objects and they provide a reliable measurement.

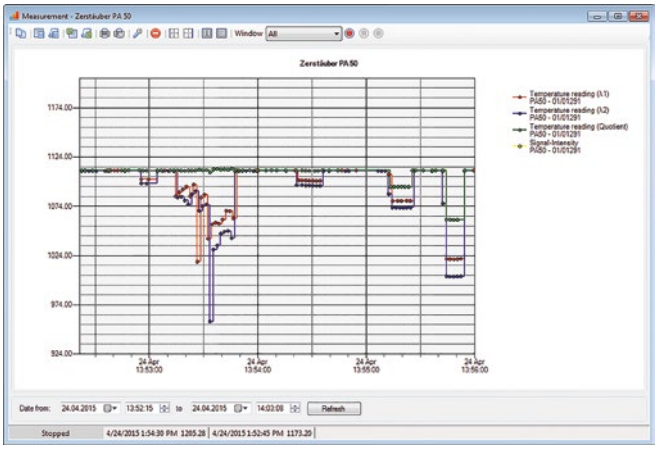
The CellaTemp 43 is offered with 5 different lenses. Used together with the optionally available supplementary lenses, you may choose among more than 40 different optical variations for target objects starting from 0.1 mm.

The measurement area calculator on our website www.keller.de/its makes it easy for you to select the suitable objective lens and the supplementary lens to determine the optimal solution for your application.

If you want use the pyrometer to measure tungsten, a special calibration curve is available to take into account the specific radiation characteristics of tungsten in relation to the measurement temperature.

For optical adjustment, you have the option to choose between through-the-lens sighting, a laser or a colour camera. The target marker in the viewfinder or on the monitor defines the exact size and position of the measurement area.

Via a digital interface, the measurement readings can be transferred from the pyrometer directly to a personal computer where they can be recorded with the CellaView software.



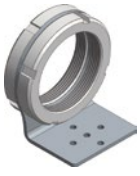
When using the device together with a video camera, visual changes on the surface of the target object can additionally be recorded and analysed.

Measuring system

Model PA 43 ...			Technical data			
Sighting aids Through-the-lens sighting	Video camera	Laser spot light	Measuring range	Objective lens	Focal range	Measurement area*
AF 20	AF 20/C	AF 20/L	600 - 1400 °C 1112 - 2552 °F	PZ 20.08	0.30 m - ∞	≥ 2.00 mm
AF 1	AF 1/C	AF 1/L	650 - 1700 °C 1202 - 3092 °F	PZ 20.01	0.40 m - ∞	≥ 1.74 mm
AF 2	AF 2/C	AF 2/L		PZ 20.03	0.20 m - 0.40 m	0.93 - 1.86 mm
AF 3	AF 3/C	AF 3/L		PZ 20.06	1.20 m - ∞	≥ 3.20 mm
AF 10	AF 10/C	AF 10/L		PZ 20.05	0.20 m - ∞	≥ 3.64 mm
AF 13	AF 13/C	AF 13/L		PZ 20.08	0.30 m - ∞	≥ 2.00 mm
AF 21	AF 21/C	AF 21/L		PA 20.06	0.60 m - ∞	≥ 1.20 mm
AF 4	AF 4/C	AF 4/L	750 - 2400 °C 1382 - 4532 °F	PZ 20.01	0.40 m - ∞	≥ 1.14 mm
AF 5	AF 5/C	AF 5/L		PZ 20.03	0.20 m - 0.40 m	0.61 - 1.21 mm
AF 6	AF 6/C	AF 6/L		PZ 20.06	1.20 m - ∞	≥ 2.07 mm
AF 11	AF 11/C	AF 11/L		PZ 20.05	0.20 m - ∞	≥ 2.35 mm
AF 14	AF 14/C	AF 14/L		PZ 20.08	0.30 m - ∞	≥ 1.30 mm
AF 17	AF 17/C	AF 17/L		PA 40.01	86 mm - 115 mm	0.23 - 0.30 mm
AF 22	AF 22/C	AF 22/L		PA 20.06	0.60 m - ∞	≥ 0.82 mm
AF 7	AF 7/C	AF 7/L	850 - 3000 °C 1562 - 5432 °F	PZ 20.01	0.40 m - ∞	≥ 1.14 mm
AF 8	AF 8/C	AF 8/L		PZ 20.03	0.20 m - 0.40 m	0.61 - 1.21 mm
AF 9	AF 9/C	AF 9/L		PZ 20.06	1.20 m - ∞	≥ 2.07 mm
AF 12	AF 12/C	AF 12/L		PZ 20.05	0.20 m - ∞	≥ 2.35 mm
AF 15	AF 15/C	AF 15/L		PZ 20.08	0.30 m - ∞	≥ 1.30 mm
AF 18	AF 18/C	AF 18/L		PA 40.01	86 mm - 115 mm	0.23 - 0.30 mm
AF 23	AF 23/C	AF 23/L		PA 20.06	0.60 m - ∞	≥ 0.82 mm

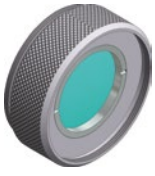
* Use supplementary lenses for smaller measurement areas.

Accessories

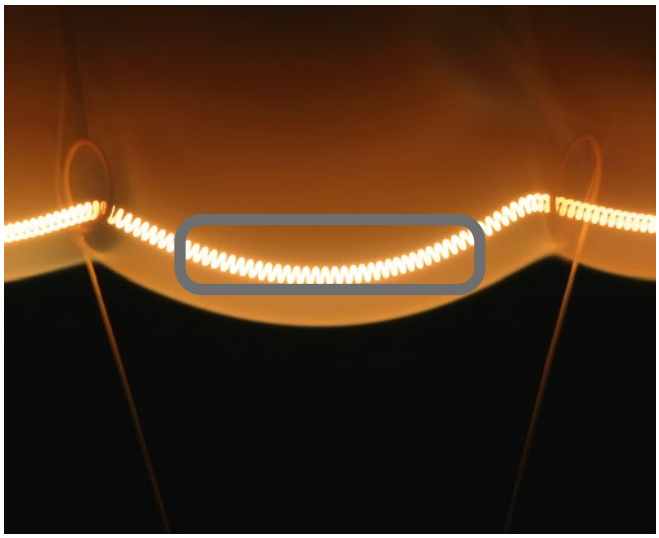


Mounting bracket with 2 shaft nuts
PA 11/U

Mounting angle
PA 11/K



Supplementary lenses
PZ 20/O-50
PZ 20/O-63
PZ 20/O-75
PZ 20/O-120



KELLER

Creating Solutions

infrared temperature solutions ITS

No 1 in terms of ACCURACY RELIABILITY INNOVATION

IO-Link

PROFIBUS

Keller HCW GmbH
Infrared Temperature Solutions (ITS)
Carl-Keller-Straße 2 - 10
49479 Ibbenbüren-Laggenbeck
Germany

www.keller.de/its
Tel. +49 (0) 5451 850
Fax +49 (0) 5451 85412
its@keller.de

Distributor

KROHNE INOR

INOR Transmitter Oy
Unikkotie 13
FI-01300 Vantaa
Puhelin +358 10 4217900
Faksi +358 10 4217901
myynti@inor.fi