

KELLER

*infrared
temperature
solutions*

ITS

N^o1

in terms of
ACCURACY
RELIABILITY
INNOVATION



Application Roller stand

Temperature measurements at a roller stand – reliable observing and monitoring of production parameters



By MZaplotnik - Own work, CC BY-SA 3.0, <https://commons.wikimedia.org/w/index.php?curid=34502607>

Description of the application

The constantly growing requirements concerning the product quality of iron and steel products place ever higher demands on manufacturers. To meet these demands, the quality assurance departments are asking for ever closer tolerances for the rolling temperature. Also, the rolling temperatures for manufacturing metal sheets were reduced even further during the last years.

To observe and monitor the predefined production parameters it is therefore imperative to use modern measuring instruments tailored to the specific requirements.

The lower limit of the rolling temperature has meanwhile dropped so far that temperatures starting at 500 °C need to be detected.

Temperature measurements with pyrometers

Optical pyrometers are used to determine the slab temperature. They measure the infrared radiation of the object without contact from a safe distance and calculate the temperature from the radiation value.

The sighting path of the pyrometer is obstructed by dense water vapour and smoke formation at the relevant measuring points. For a reliable capture of the temperature it is imperative to use a two-colour pyrometer. But not all types of two-colour pyrometers are appropriate for this application. It is important to select devices with suitable wavelengths where both the smoke formation and water vapour will have no impacts on the measurement result.

A two-colour pyrometer measures the intensity of the infrared radiation emitted from the measuring object at two neighbouring wavelengths. The temperature of the object is then defined by the ratio of these two radiation intensities. Smoke, dust and water vapour in the sighting path between pyrometer and the slab weakens the infrared radiation. A two-colour pyrometer compensates for this interference and still displays the correct temperature despite the weakened signals.

Solution

The CellaTemp PA 40 AF 20 measures in the short-wave range and safely captures temperatures at roller stands already from 500 °C upwards. Achieved is this through a combination of state-of-the-art sensor technology, most modern measurement reading processing and a special high-luminous optical system. The short-wave spectral sensitivity eliminates the influences of smoke and water vapour of the measurement reading. Owing to the dynamic signal adaptation even signals weakened up to 90 % are permissible for temperatures from 580 °C upwards.

Therefore, the CellaTemp PA 40 AF 20 fulfils all requirements for a safe temperature measurement at roller stands.

A variety of pyrometer models is available to suit different rolling temperatures, target sizes, measuring distances and assembly variants.



For optical adjustment, you have the option to select a CellaTemp PA 40 either with 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.



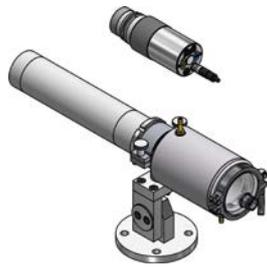
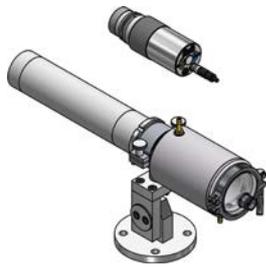
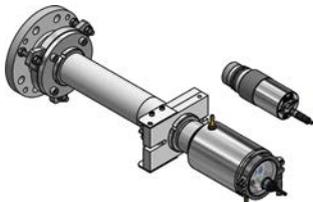
Limited space for installation or high ambient temperatures may require a separate optical sensor head and a fibre optic cable for the transmission of the infrared radiation to the evaluating unit. The sensor head can be used without cooling device up to ambient temperatures of 250 °C.

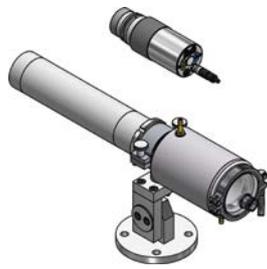
Via a digital interface, the measurement readings can be transferred from the pyrometer directly to a personal computer where they can be recorded with the CellaView software.



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 systems

Measuring system	PA 10-K003	PA 29-K002	PA 40-K004
			
Pyrometer	PA 10 AF 1/L	PA 29 AF 10/L	PA 40 AF 4
Model	stationary		
Measuring range	0 – 1000 °C	150 – 800 °C	750 – 2400 °C
Sighting aid	Laser pilot light		Through-the-lens-sighting
Measuring spot	round		
Spectral range	8 - 14 µm	1.8 - 2.2 µm	0.95 / 1.05 µm
Mounting	PA 83-010		PA 20-058
Scope of delivery	Pyrometer Connecting cable VK 02/A (5 m) Mounting PA 83-010		Pyrometer Connecting cable VK 02/A (5 m) Mounting PA 20-058

Measuring system	PA 40-K010	PA 40-K011	PA 41-K001
			
Pyrometer	PA 40 AF 20/L	PA 40 AF 3/L	PA 41 AF 190
Model	stationary		
Measuring range	500 – 1400 °C	650 – 1700 °C	900 – 3000 °C
Sighting aid	Through-the-lens-sighting		Laser pilot light
Measuring spot	round		
Spectral range	0.95 / 1.05 µm		
Mounting	PA 83-010		PA 20-091
Scope of delivery	Pyrometer Connecting cable VK 02/A (5 m) Mounting PA 83-010		Pyrometer Connecting cable VK 02/A (5 m) Mounting PA 20-091

KELLER

Creating Solutions

infrared
temperature
solutions **ITS**



- Headquarters
- Sales and Service Center
- Sales abroad



IO-Link



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

Sales and Service Center

Frankreich
www.keller.de/its
Tel. +33 (0) 951 453050
its@keller.de

Italien
www.giga-tech.it
Tel. +39 (0) 296489130
contatti@giga-tech.it

Österreich
www.sensotec.at
Tel. +43 313 551 650
office@sensotec.at

Russland
www.ampermetr.com
Tel. +7 343 384 55 45
info@ampermetr.com

Spanien
www.umi.es
Tel. +34 94 446 62 50
comercial@umi.es

China
www.keller-its.cn
Tel. +86 (0) 10 828 679-20
keller@germantech.com.cn

Indien
www.keller-itsindia.com
Tel. +91 (0) 98841 11025
info@keller-itsindia.com

Korea
www.ultratec.co.kr
Tel. +82 (0) 70 8282 5979
ellen@ultratec.co.kr