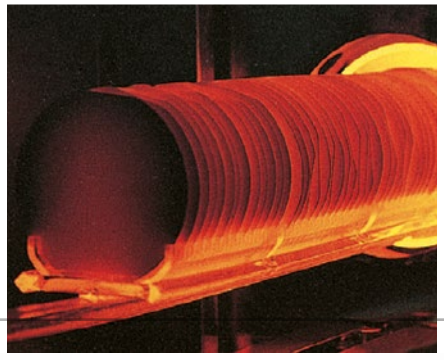
KELLER

infrared temperature solutions ITS

No 1 in terms of ACCURACY RELIABILITY INNOVATION



Intensity Comparison Pyrometer

Mikro Type PV 11

for very precise temperature measurement from
+700 °C to +3500 °C of objects starting at 0.1 mm diameter

KELLER A DIVISION OF GROUPE EGRIS INDUSTRIES

5 years warranty

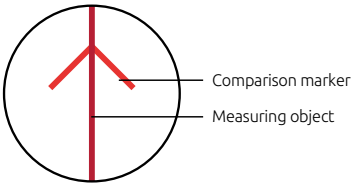
QUALITY made in Germany

Intensity Comparison Pyrometer Mikro PV 11

Special features

- Measuring range from 700 °C to 3500 °C
- Large field of view for the recognition of the measuring object
- Sharply defined picture of the measuring object
- Very high accuracy
- Very small influence of the emissivity factor due to the short spectral sensitivity
- Easy adjustment in case of variable measuring distances
- Measurement of very small objects starting at 0.1 mm
- Extremely high optical resolution
- The brightness of the comparing light source is continuously measured by a patented process, thereby aging effects are compensated.

The principle of measurement



View through the optics

The intensity comparison pyrometer PV 11 is based on the visual intensity comparison of the measuring object with a calibrated reference lamp situated in the instrument. The measuring object is observed through the optic.

A comparison marking is reflected into the picture of the measuring object. By manual alteration of the radiation intensity of the reference lamp the brightness of the comparison marking is harmonized with that of the measuring object until both are identical. Then the temperature value can be read off from an integrated digital display.

Thanks to the very high sensitivity of the human eye and the instrument's short-wave spectral sensitivity this measuring method is in fact one of the oldest but nevertheless one of the most accurate ones in the field of non-contact temperature measurements and clearly superior to today's modern electronic devices.

The comparison marker is a purely visual creation. The intensity of the light source is continuously checked and electronically held at a constant level. Thus the device is not subject to ageing and supplies stable measurement readings for many years without needing recalibration.

Another advantage of the intensity comparison method is the quasi independence of the measurement from the size of the measuring object. This allows for temperature measurements of object sizes starting at 0.1 mm.

Another asset of the Micro is its optical resolution of 5000 : 1 that is far superior to electronic devices. For example, objects of 1 mm can still be measured from a distance of 5 m.

The lens with screw thread is focusable with a very high accuracy to measuring distances from 1 m - ∞. A set of supplementary lenses is optionally available for distances between 0.2 – 1 m. The large viewing angle facilitates an alignment to the measuring object. 6 filter stages together with a high-resolution multi-turn potentiometer allow for precise intensity adjustment of the reference radiation source.

Examples of application

- **Laboratory instrument manufacturers – atomic absorption spectrometers**
  Exact temperature determination on graphite cells.
- **Vacuum furnaces – metal samples**
  Temperature determination on small metal samples.
- **Nuclear research – metal and ceramic samples**
  Temperature determination during the sintering of uranium tablets.
- **Manufacturers of incandescent bulbs**
  For the determination of the temperature limit of filaments out of different metal alloys.
- **Production of glass fibers**
  Reliable measurement from a great distance, independent of the diameter.
- **Universities**
  Many institutes of physics, chemistry and material science use the Mikro as reference pyrometer.

Scope of delivery

- Pyrometer
- Cross head
- Power pack
- Carrying case
- Spare lamp

Accessoires

- Close lens set D1 / D2 / D4
  lens D1 for 0.5 - 1.0 m
  lens D2 for 0.33 - 0.55 m
  lens D1 + D2 for 0.25 - 0.33 m
  lens D4 for 0.2 - 0.25 mm
- Grey filter NDx4 (D 0.60) M43 thread, transmission approx. 25% (for extending the measuring range up to 3500 °C)
- Floor stand PT 50/B

Technical data

Measuring range
- +700 to +3500 °C, sub-divided into 6 partial ranges
- up to +3500 °C with attachable filter

Accuracy
- 1.5 % of reading (+700 to +800 °C)
- 0.6 % of reading (+800 to +2000 °C)
- 2.0 % of reading (+2000 to +3500 °C)

Accuracy of adjustment (at ε = 1 and T_a = 23 °C)
The accuracy depends on the sensitivity of the eye of the measuring person. On average it is
- at +1000 °C: ± 1.5 °C
- at +2000 °C: ± 5.0 °C
- at +3000 °C: ± 10.0 °C

Resolution of display
- 1 K

Repeatability
- 3 K

Measuring distances
- Without supplementary lens: 1 m to ∞
- With supplementary lenses: 0.2 m to 1 m

Optical resolution
- 5000 : 1

Min. target diameter
- 0.3 mm at a distance of 1 m
- 0.1 mm at a distance of 0.2 m (with supplementary lens)

Sighting device
- True sided through-the-lens sighting with dioptric compensation, faded-in comparison marking, focus-sable optic

Display
- 4-digit digital, LCD

Aiming support
- cross head: horizontally: 360° vertically: 90°

Adjustable parameter
- Emissivity 10 to 100%

Power supply
- 15 V DC or 230 V AC via plug power supply unit (included in the scope of delivery)

Spectral sensitivity
- partial range I: 500 - 670 nm
- partial range II: 620 - 670 nm
- partial range III - VI: 650 - 670 nm

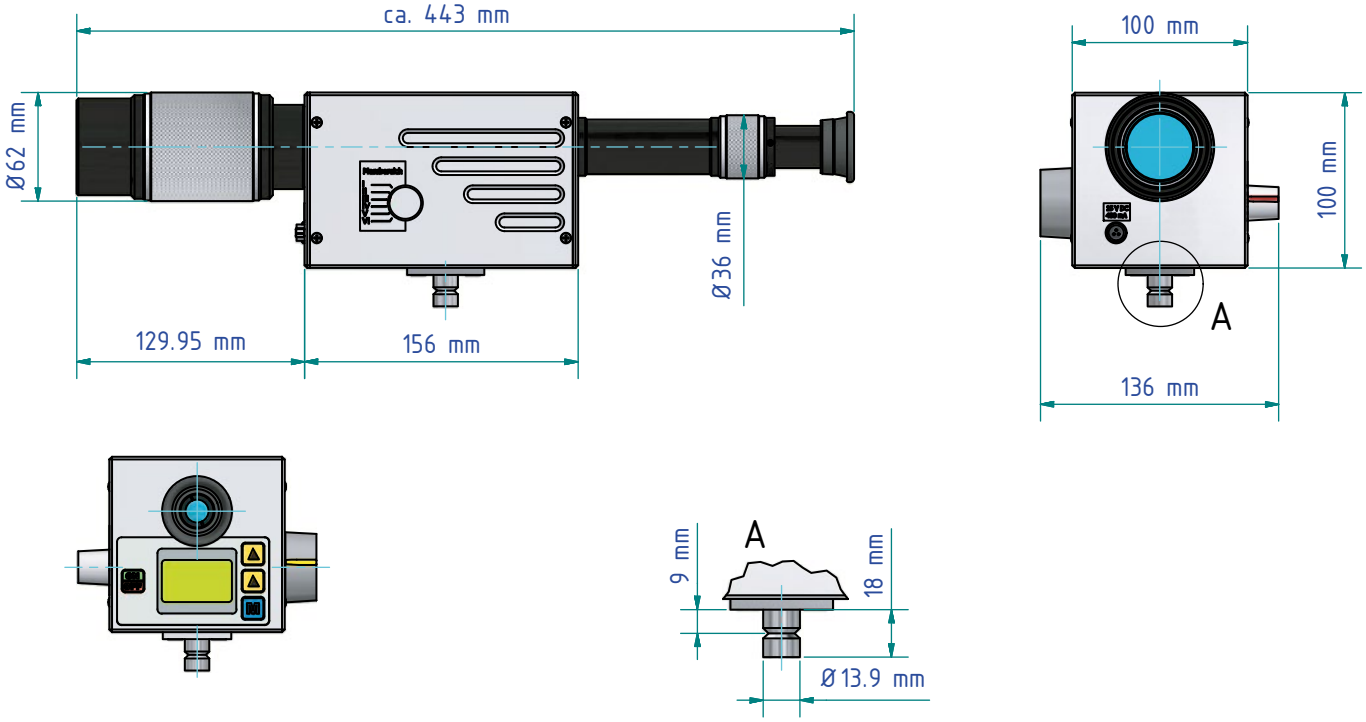
Max. ambient temperature
- +10 °C to +45 °C

Storage temperature
- 0 °C to +55 °C

Housing
- Aluminium

Dimensions
- 100 x 100 x 450 mm

Dimensions



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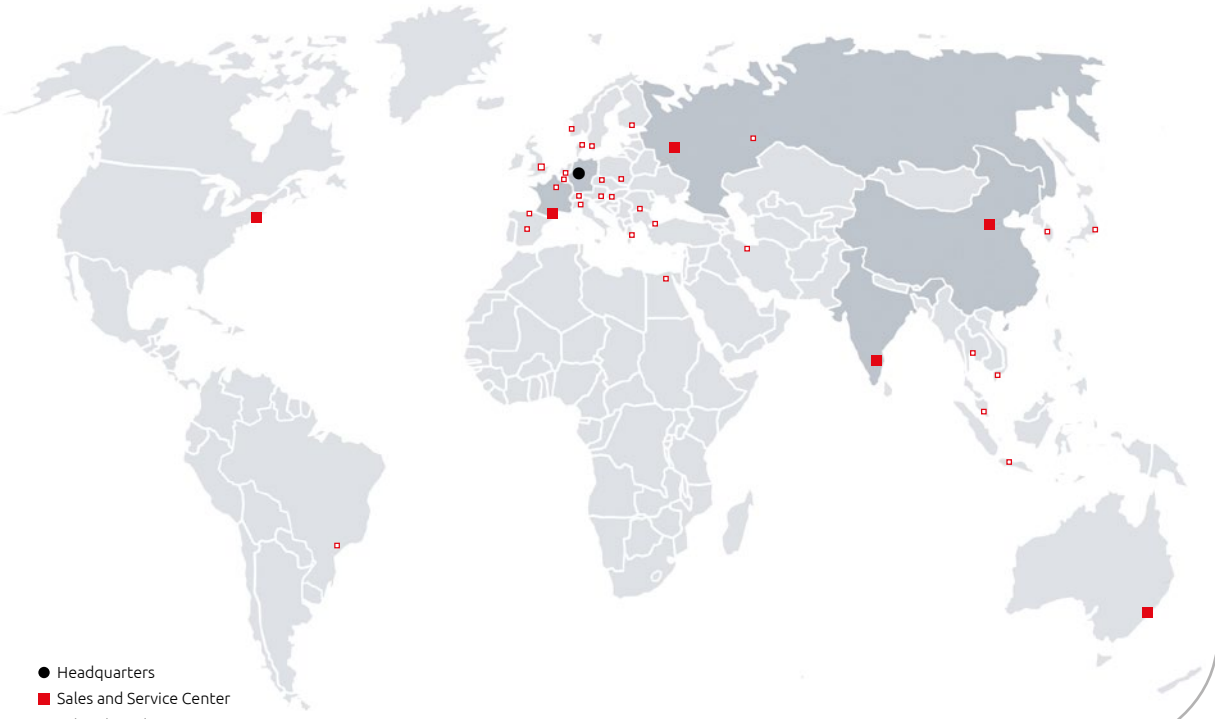
Creating Solutions

infrared temperature solutions **ITS**



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