

Portable infrared thermometer CellaWire PT 143 with rectangular measurement area

by **Albert Book**

KELLER HCW GmbH's Division MSR is a specialist in the field of non-contact temperature measurements. Since 1967, KELLER MSR has been developing and manufacturing infrared radiation thermometers for various industrial sectors, such as the steel, glass and cement industry, power stations, foundries, and the paper and plastics industry. A radiation thermometer detects the thermal radiation emitted from a measuring object and calculates its temperature value.

Infrared thermometers or pyrometers are ideal for measuring the temperature in wire production. From a safe distance they capture the temperature of the passing wires without contact during running operations. The measurement is difficult as the wire often moves perpendicular to the axial direction, leaving the measurement area again and again during this process. Changing wire diameters can also affect the measurement reading. Pyrometers are also used to measure liquid metals. When pouring the liquid metal into a mould, the pouring stream shifts in relation to the tilt angle of the ladle.

It gets really difficult when a handheld measuring device is used to detect the object temperature. Therefore, it is practically impossible to use a common portable pyrometer with a round measurement area to obtain a correct measurement. From a few metres away, the operator is hardly in a position to hold the device steady enough to keep the object always within the measurement area during the measurement.

Sometimes, however, an apparently simple approach is needed to solve a complex problem. To solve the focussing issue, KELLER MSR developed a portable infrared thermometer with a unique technology. The special feature of the CellaWire PT 143 is the rectangular measurement area. This was made possible by using a new sensor technology and by developing a new optical component. The measurement area is now part of the optical system; therefore there are no moving parts involved.

The pyrometer is based on the two-colour or ratio measuring method. This means that the radiation is measured simultaneously at two wavelengths. The temperature is then determined by the ratio of these two signals. An advantage of the two-colour method is that the target object may be smaller than the measurement area and that it can move freely within this area.



The rectangular target marker displayed in the sighting path indicates the exact size and position of the measuring area.

This makes targeting the handheld device on a hot measuring object very easy and allows for safe measurements of swaying wires or moving objects. A worm thread is used to adjust the pyrometer lens to ensure precision across the range from 0.4 m to infinity. The ocular features a widened interpupillary distance, making it suitable for users who wear glasses or a helmet.

Up to a certain degree, the two-colour measuring method used for the infrared thermometer produces reliable temperature data even in a rough environment where dust and steam might obstruct the measurement.

Another novelty recently patented for KELLER is a traffic light status indicator integrated in the viewfinder. The SAM (Signal Attenuation Monitoring) function continuously monitors the signal level of the incoming infrared radiation. It informs the user whether the ideal target distance is kept or not. It also lets the user know whether a dirty protection screen, heavy steam or dirt or a too small target diameter still produces a reliable measurement. If this is not possible, the SAM function will prevent the pyrometer from generating a false temperature reading.

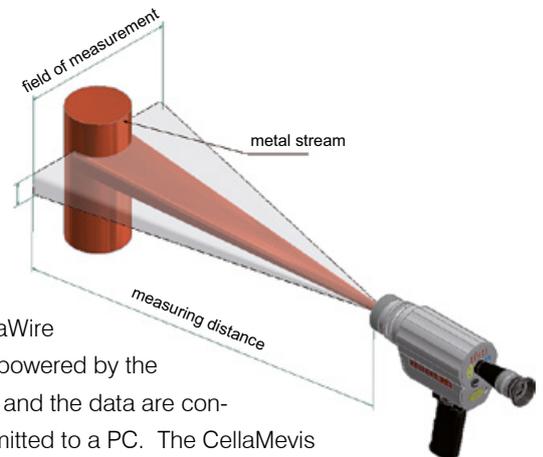
The pyrometer is quite easy to operate. You only have to switch it on and align it at the hot target.

Thanks to the ATD (automatic temperature detection) function, it automatically starts measuring. An audible alarm indicates the end of the measurement. The pyrometer shows the correct



temperature reading at the rear display.

For prolonged temperature measurements, the CellaWire PT 143 can be powered by the battery charger and the data are continuously transmitted to a PC. The CellaMevis software provides online graphical display and enables data archiving on the computer.



CellaCast PT 143 comprises different models for temperatures ranging from 600 °C to 3000 °C. Four interchangeable lenses are available for different target distances and sizes for applications involving wire diameters from 2mm upwards. Additionally, the optical resolution can be enlarged by mounting supplementary lenses to the pyrometer to capture target spots as small as 0.3 mm.

The pyrometer's memory will store up to 10 individually preset material constants so that the pyrometer can be adapted in no time to measure different materials.

Due to its extremely robust aluminium housing and its very high electromagnetic immunity the device can be used under extreme industrial conditions without restrictions.



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