

HIGH PERFORMANCE SERIES

Smallest Spot Size

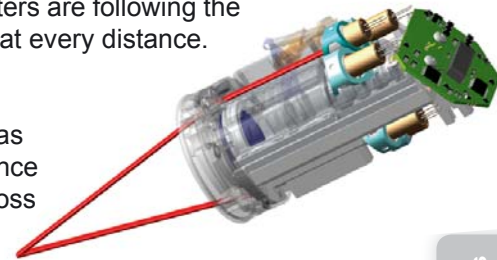
Accurate Measurement Field
Marking through Laser Sight

Sensors with High Optical Performance and Innovative Laser Sighting



The devices of the product group consist of an **innovative double laser sighting**, in contrast to many pyrometers with single lasers which only mark the middle but not the size of the spot. The two emitters are following the infrared optical path to mark the **accurate size and spot of the measuring field** at every distance. Measurement mistakes will therefore be avoided.

The infrared thermometers of this class are mainly used in industrial area as well as research and development. **Small measurement field sizes** are of great importance for precise temperature measurement. The smallest spot size is marked by the cross over point of the two laser sights. The optris CTlaser 1M, for example, achieves a measurement field size of 0.5 mm in 150 mm distance. Additionally, a number of different lenses allow a **flexible adjustment** for the single applications.



The Different Device Designs

The first design of the high performance series is the **single-piece sensing head**. Lens and electronic are obstructed within a compact device.



Furthermore a two-piece design is available consisting of the **sensing head** and **separate electronic box**.

The box offers the possibility to choose between different interfaces (see page 26f), additionally to the simple device configuration and a temperature display.



Sensing head and the **separate electronic box** can also be connected by a **glass fiber cable**.

Both the sensing head and the glass fiber cable are usable for up to **250°C** ambient temperature without additional cooling.



When Optical Performance Counts



An important, overall segment of the applications is the **OEM market**, especially within the **engine and plant construction**.

But also **R&D departments** and universities use the devices of this class, if very good optical device parameters are needed. Application examples are:



Non-metal surfaces (LT)

- Welding of plastic parts
- Test stations within automobile industry



Special applications (P7, F6, F2, MT)

- **P7:** Production of foils (PES, PTFE)
- **F6:** Combustion gas in waste burning machinery
- **F2:** Combustion gas in reactors
- **MT:** Temperature measurement of ceramics and glass through flames



Glass surfaces (G5)

- Production of laboratory glass
- Glass bottles and container glass



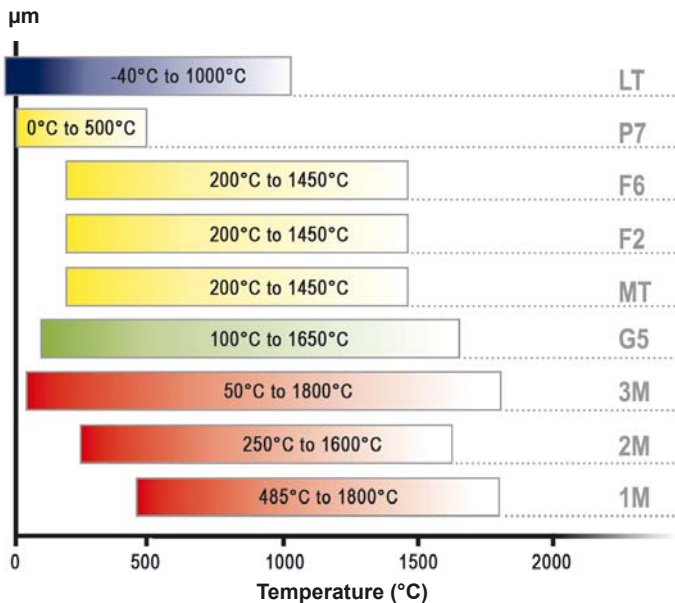
Metal surfaces (3M; 2M; 1M)

- **3M:** Induktion heating of battery terminals
- **2M:** Induction hardening of cog wheels
- **1M:** Pipe welding processes

Wide Temperature Range



The temperature range of the high performance series lays between **-50 °C and 1800°C**, depending on the wavelength and the type of device.



Temperature range of the high performance series over the wavelength

Smallest Spot Size at Every Distance



The high performance series is used, where a **high optical resolution** as well as an **accurate measurement field marking through a laser sighting** is of great importance. Therefore, a perfect adjustment of the devices is possible. The following lenses are available.

Example:
0.5 mm @ 150 mm



Close lens (CF, close focus): Measurement of smallest measurement objects close to the sensor.

Example:
3.7 mm @ 1.1 m



Standard lens (SF, standard focus): Measurement of smallest measurement objects in mean distances.

Example:
12 mm @ 3.6 m



Far lens (FF, far focus): Measurement of smallest measurement objects in greater distances.

Suitable for Fast Processes



Different measurement velocities (response time) are available to you depending on the measurement device and the kind of detector. The fastest long wavelength device is the optris CTlaser LTF with **9 ms** reaction time. Within the short wave area difference in temperatures can precisely be measured within **1 ms**.



The high performance series is characterized by a great local resolution and a fast response time.

Accessories for Rough Surroundings

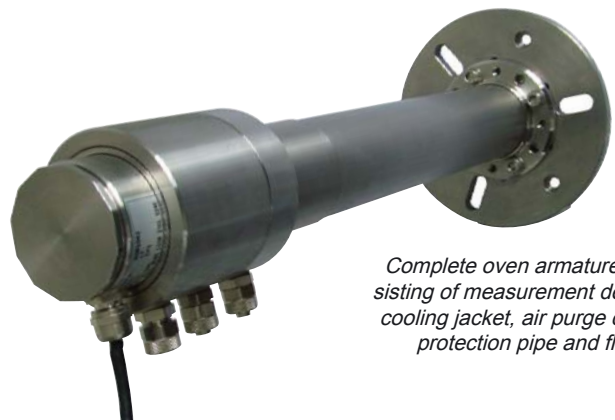


All sensing heads of the high performance series are suitable for ambient temperatures up to **85°C**. The lasers are automatically turned off at 50°C.

Air purge collars are available in different sizes depending on the kind of device. The sensing head will therefore be protected from dirt and environmental influences.

We suggest the use of the **cooling jacket** (operation temperature up to 175°C) for applications with higher ambient temperatures.

The optional **cooling housing** protects the measuring head within hot surroundings through cooling with air up to 100°C and cooling through water up to 315°C. High temperature resistant cables are available for the housings.



Complete oven armature consisting of measurement device, cooling jacket, air purge collar, protection pipe and flanch.

The Appropriate Interface for your Measurement Task



Analog and digital interfaces are available for data evaluation depending on the device.

Additional information regarding the interfaces can be found on **page 26f**.

Software for Parameterization and Documentation

The software optris Compact Connect allows simple and fast parameterization of the measuring devices and offers documentation of the measurement datas.

Additional information regarding the software can be found on **page 24f**.

Device Example: optris CSLaser LT - High Performance in One Box

The optris CSLaser LT has been developed for customers of the manufacturing industry. It is a **single-piece, strong performance device** with integrated lens and electronic and can measure temperatures at **very small objects**. The device is suitable for temperature measurement at products, but also at machineries or tools. More and more OEM customers recognise it as an indispensable device due to the high replaceability.

The optris CSLaser LT offers an analog **two-wire-interface** (4-20 mA current loop) which is very common in the industry. An additional alarm output (open-collector, 0-30 V, 500 mA) is a product benefit which is not common around two-wire-sensors.

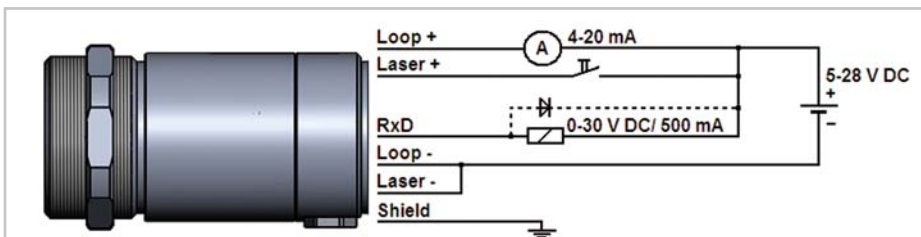
The device can simultaneously sent digital datas to a PC via an USB interface. The implementation of the sensor into the software optris Compact Connect allows the collection of temperature data as well as a complete parameterization of the sensor.



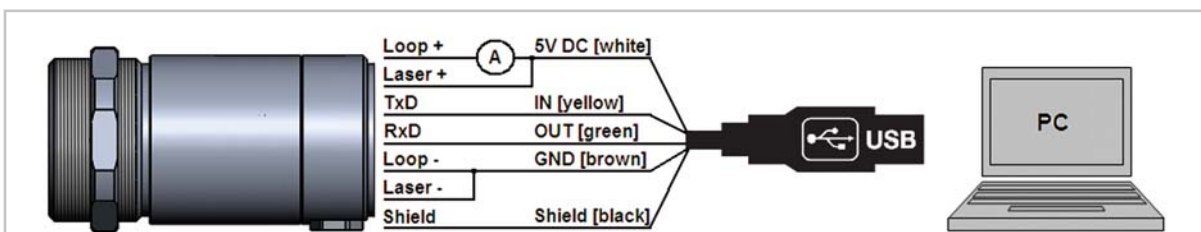
Double laser sight for accurate measurement field marking in every distance, e.g. 0.5 mm at 150 mm distance.



Simple emissivity setup between 0.10...1.09 and individual cabling directly at the sensing head.



Device analog operation with 4-20mA signal and alarm output (open-Collector) at in- / out-pin

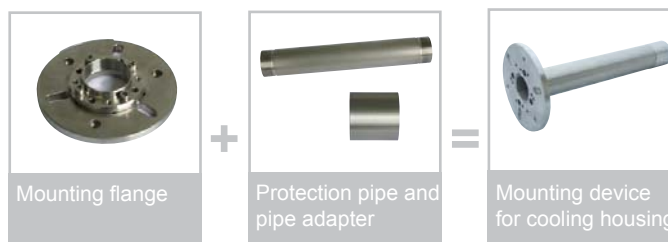


Device with simultaneous analog & digital operation with complete parameterization possibility via software

Mechanical Accessories

				
Mounting angle, adjustable in one axis	Mounting angle, adjustable in two axes	Air purge collar	Cooling jacket	Cooling housing
				
Mounting angle, for cooling housing, adjustable in two axes	Mounting flange, for protective pipe or cooling housing	Protection pipe and pipe adapter, for cooling housing	Rail mount adapter, for CT electronic box	Closed box cover, for CT electronic box

Examples of Possible Combination of Accessories for High Performance Series



Application Example: Temperature Measurement during Induction Hardening

Heat treatment gained high importance within the metal industry. Characteristics, such as corrosion resistance, magnetism, hardness, ductility, scuff resistance and breaking behaviour can be influenced by targeted heat treatment.

Induction heating is one kind of heat treatment. Workpieces are brought into a strong electromagnetic field, therefore heated and finally freezed in a defined texture.

It is possible to locally define the depth of impression of the heat into the material by controlling the frequency. The aimed texture structure of the metal depends on the ideal temperature time process. Therefore it is important to permanently monitor the temperature.

Due to high electronicmagnetic fields, the optris CTlaser 1M, 2M and 3M are ideal for this application as the electronic is seperated from the sensing head and therefore protected from the radiation.

Advantages of the optris CTlaser 1M / 2M / 3M:

- Wavelength especially for metal surfaces (1 μm / 1.6 μm / 2.3 μm)
- Reliable temperature measurement of metal from 50°C up to 1800°C
- Fast temperature control through measurements within 1 ms
- Measurement of smallest parts through high optical resolution (measurement field starting from 0.7 mm)



optris CTlaser devices for the use at induction hardening.