

Non-contact temperature measurement from 100 °C to 1800 °C of laser material processing

Features:

- New infrared thermometer for laser material processing, laser welding and laser soldering
- Special blocking filter against laser radiation of most of all diode lasers and solid state lasers (VIS to 1800 nm and 10.6 µm)
- Far focus version for use with laser collimator optics
- Usable up to 85 °C ambient temperature without cooling
- Short wave length range of 2.3 µm to reduce error of reading with measurements on materials with unknown emissivity



General specifications

Environmental rating	IP 65 (NEMA-4)
Ambient temperature ¹⁾	-40 °C ... 85 °C (sensing head) -20 °C ... 85 °C (electronics)
Storage temperature	-40 °C ... 125 °C (sensing head) -40 °C ... 85 °C (electronics)
Relative humidity	10–95 %, non condensing
Vibration (sensor)	IEC 68-2-6: 3 G, 11–200 Hz, any axis
Shock (sensor)	IEC 68-2-27: 50 G, 11 ms, any axis
Weight	150 g (sensing head) 420 g (electronics)

Electrical Specifications

Outputs / analog	0/4–20 mA, 0–5/ 10 V, thermocouple J, K, alarm
Output / alarm	24 V / 50 mA (open collector)
Optional	Relay: 2 x 60 V DC/ 42 V AC _{eff} ; 0.4 A; optically isolated
Outputs / digital	USB, RS232, RS485, CAN, Profibus DP, Ethernet (optional)
Output impedances	mA max. 500 Ω (with 8–36 V DC) mV min. 100 kΩ load impedance thermocouple 20 Ω
Inputs	Programmable functional inputs for external emissivity adjustment, ambient temperature compensation, trigger (reset of hold functions)
Cable length	3 m (standard)
Power Supply	8–36 V DC
Current draw	Max. 100 mA

Measurement specifications

Temperature ranges ²⁾ (scalable via programming keys or software)	100 °C ... 600 °C (3MH) 150 °C ... 1000 °C (3MH1) 200 °C ... 1500 °C (3MH2) 250 °C ... 1800 °C (3MH3)
Spectral ranges	2.3 µm
Optical resolution (90 % energy)	100:1 (3MH) 300:1 (3MH1–3MH3)
System accuracy ³⁾ (at ambient temp. 23 ±5 °C)	±(0.3 % of reading +2 °C)
Repeatability (at ambient temp. 23 ±5 °C)	±(0.1 % of reading +1 °C)
Temperature resolution	0.1 K
Exposure time ⁴⁾ (90 % signal)	1 ms
Emissivity / Gain (adjustable via programming keys or software)	0.100–1.100
Transmissivity / Gain (adjustable via programming keys or software)	0.100–1.100
Signal processing (parameter adjustable via programming keys or software, respectively)	Peak hold, valley hold, average; extended hold function with threshold and hysteresis
Software	optris® Compact Connect

¹⁾ The functioning of the LCD Display may be limited in ambient temperatures below 0 °C

²⁾ $T_{object} > T_{sensing\ head} + 25\ °C$

³⁾ $\epsilon = 1$, Response time 1 s

⁴⁾ With dynamic adaptation at low signal levels

