

Infrared thermometers

with highest optical resolution and double laser



CSlaser series

Single-piece - Electronic within sensing head

Probably the most space-saving design is the one-piece measuring head. Optics and electronics are built into one compact device.

CTlaser series

Two-piece - Sensing head and separate electronic box

The two-part thermometer design consists of the measuring head and separate electronics box. In addition to easy device configuration and a temperature display, the electronics box offers the possibility to choose between different interfaces, such as USB, RS232, RS485, Modbus RTU, Profibus DP and Ethernet.

Ratio pyrometer

In metallurgy, a high emission of dust, smoke or vapor often cannot be avoided. A ratio thermometer ensures a reliable temperature measurement of melts or metallic surfaces even under these adverse conditions. The CTratio provides constant measurement results even with a partially dirty lens or for objects that move within the measurement area (e.g. metal rods or wires).



Basic model	CSlaser	CSlaser	CSlaser
Type	LT / hs LT	2M	G5
Classification / special features	Single-piece two-wire sensor with electronics in sensing head	Single-piece two-wire sensor with electronics in sensing head for measurement of metal	Single-piece two-wire infrared thermometer for temperature measurement of glass
Detector	Thermopile	InGaAs	Thermopile
Sensing head exchangeable	-	-	-
Head cable shortening	■	■	■
Thread (sensing head)	M48x1.5	M48x1.5	M48x1.5
Spectral range	8–14 µm	1.6 µm	5.0 µm
Temperature ranges	LT: -30 ... 1000 °C hs LT: -20 ... 150 °C	L: 250 ... 800 °C H: 385 ... 1600 °C	HF: 200 ... 1450 °C H1F: 250 ... 1650 °C
Temperature resolution	LT: 0.1 K / hs LT: 0.025 K	0.1 K	0.1 K
Optical resolution	50:1	2MH: 300:1 2ML: 150:1	HF / H1F: 45:1
Option: CF lens	-	-	-
Smallest spot (CF optics/ add. CF lens)	1.4 mm @ 70 mm	0.5 mm @ 150 mm	1.6 mm @ 70 mm
Smallest spot (SF optics)	24 mm @ 1200 mm	3.7 mm @ 1100 mm	27 mm @ 1200 mm
Sighting	Double laser	Double laser	Double laser
Response time (90 %)	150 ms	10 ms	HF / H1F: 30 ms
Accuracy	±1 °C or ±1 %	±(0.3% T _{Meas} +2 °C)	±1.5 °C or ±1 %
Outputs analog: 0–20 mA / 4–20 mA / 0–5 V / 0–10 V / t/c (K/J)	- / ■ / - / - / -	- / ■ / - / - / -	- / ■ / - / - / -
Second analog output	-	-	-
Interfaces: USB / RS232 / RS485 / Profibus / Ethernet / Modbus RTU / Relay	■ / - / - / - / - / - / -	■ / - / - / - / - / - / -	■ / - / - / - / - / - / -
Signal processing: Peak / Valley / AVG / Advanced hold	■ / ■ / ■ / ■	■ / ■ / ■ / ■	■ / ■ / ■ / ■
T_{Amb} Head min.	-20 °C	-20 °C	-20 °C
T_{Amb} Head max.	85 °C	85 °C	85 °C
T_{Amb} Electronics max.	85 °C	85 °C	85 °C
Functional inputs/ number	- / -	- / -	- / -
External emissivity adjustment	-	-	-
External background temperature control	-	-	-
Trigger input for reset of hold functions	-	-	-
Digital I/O pins/ number	-	-	-
Simultaneous analog and digital output	■	■	■
Alarm output as alternative to analog output	■	■	■
Additional alarm output/ switching output	■	■	■
Voltage supply	5–30 V DC	5–30 V DC	5–30 V DC
Standard cable length	3 m	3 m	3 m
Cable length options	8 / 15 m	8 / 15 m	8 / 15 m

Basic model	CTlaser	CTlaser	CTlaser	CTlaser	CTlaser	CTlaser	CTlaser	CTlaser	CTlaser	CTratio
Type	LT / LTF	05M	1M / 2M	3M	4M	MT / F2 / F6	G5	G7	P7	1M / 2M
Classification / special features	Two-piece sensor with separate electronic box with fast response time, incl. programming keys and display	Two-piece sensor with separate electronic box for high temp. measurement of liquid metal, incl. programming keys and display	Two-piece sensor with separate electronic box for high temp. measurement of metal, incl. programming keys and display	Two-piece sensor with separate electronic box for low temp. measurement of metal, incl. programming keys and display	Two-piece sensor for low temp. and high speed meas. with separate electronic box incl. programming keys and display	Two-piece sensor with separate electronic box incl. progr. keys and display for measurement: MT: through flames F2: CO ₂ flame gas F6: CO flame gas	Two-piece sensor with separate electronic box for measurement of glass, incl. programming keys and display	Two-piece sensor with separate electronic box for measurement of ultra-thin glass sheets, incl. programming keys and display	Two-piece sensor with separate electronic box for measurement of ultra-thin plastic foils, incl. programming keys and display	Ratio pyrometer with separate electronic box for high temp. measurement of metal with green laser, incl. programming keys and display
Detector	Thermopile	Si	1M: Si / 2M: InGaAs	Extended InGaAs	InAsSb	Thermopile	Thermopile	Thermopile	Thermopile	Sandwich
Sensing head exchangeable	■	■	■	■	–	■	■	■	■	–
Head cable shortening	■ [max. 6 m]	■ [max. 6 m]	■ [max. 6 m]	■ [max. 6 m]	■	■ [max. 6 m]	■ [max. 6 m]	■ [max. 6 m]	■ [max. 6 m]	–
Thread (sensing head)	M48x1.5	M48x1.5	M48x1.5	M48x1.5	M12x1	M48x1.5	M48x1.5	M48x1.5	M48x1.5	M18x1
Spectral range	8–14 µm	0.525 µm	1M: 1.0 µm 2M: 1.6 µm	2.3 µm	2.2–6 µm	MT: 3.9 µm / F2: 4.24 µm / F6: 4.64 µm	5.0 µm	7.9 µm	7.9 µm	1M: 0.8–1.1 µm 2M: 1.45–1.75 µm
Temperature ranges	–50 ... 975 °C	1000 ... 2000 °C	1ML: 485 ... 1050 °C 1MH: 650 ... 1800 °C 1MH1: 800 ... 2200 °C 2ML: 250 ... 800 °C 2MH: 385 ... 1600 °C 2MH1: 490 ... 2000 °C	L: 50 ... 400 °C H: 100 ... 600 °C H1: 150 ... 1000 °C H2: 200 ... 1500 °C H3: 250 ... 1800 °C	0 °C ... 500 °C	MT / F2 / F6: 200 ... 1450 °C MTH / F2H / F6H: 400 ... 1650 °C	L: 100 ... 1200 °C H: 250 ... 1650 °C HF: 200 ... 1450 °C H1F: 400 ... 1650 °C	100 ... 1200 °C	0 ... 710 °C	1ML: 525 ... 1400 °C 1MH: 700 ... 2000 °C 1MH1: 1000 ... 3000 °C 2ML: 275 ... 1000 °C 2MH: 400 ... 1500 °C 2MH1: 550 ... 3000 °C
Temperature resolution	LT: 0.1 K / LTF: 0.5 K	0.2 K	0.1 K	0.1 K	0.1 K	0.1 K	0.1 K	0.5 K	0.5 K	0.1 K (>900 °C)
Optical resolution	LT: 75:1 LTF: 50:1	150:1	L: 150:1 H: 300:1	L: 60:1 / H: 100:1 / H1-H3: 300:1	30:1	45:1	L / HF / H1F: 45:1 H: 70:1	45:1	45:1	1ML / 2ML: 38:1 / 2MH: 50:1 / 1MH / 1MH1 / 2MH1: 100:1
Option: CF lens	–	–	–	–	■	–	–	–	–	■
Smallest spot (CF optics/ add. CF lens)	LT: 0.9 mm @ 70 mm LTF: 1.4 mm @ 70 mm	–	0.5 mm @ 150 mm	0.5 mm @ 150 mm	2.4 mm @ 70 mm	1.6 mm @ 70 mm	1 mm @ 70 mm	1.6 mm @ 70 mm	1.6 mm @ 70 mm	1.5 mm @ 150 mm
Smallest spot (SF optics)	LT: 16 mm @ 1200 mm LTF: 24 mm @ 1200 mm	7.3 mm @ 1100 mm	3.7 mm @ 1100 mm	11 mm @ 1100 mm	36.7 mm @ 1100 mm	27 mm @ 1200 mm	17 mm @ 1200 mm	27 mm @ 1200 mm	27 mm @ 1200 mm	3 mm @ 300 mm
Sighting	Double laser	Double laser	Double laser	Double laser	Double laser	Double laser	Double laser	Double laser	Double laser	Laser
Response time (90 %)	LT: 120 ms / LTF: 9 ms	1 ms	1 ms	1 ms	300 µs (90 µs exposure time)	10 ms	L: 120 ms / H: 80 ms HF / H1F: 10 ms	150 ms	150 ms	1 ms – 10 s
Accuracy	LT: ±1 °C or ±1 % LTF: ±1.5 °C or ±1.5 %	±(0.3 % T _{Meas} + 2 °C)	±(0.3 % T _{Meas} + 2 °C)	±(0.3 % T _{Meas} + 2 °C)	±(0.3 % T _{Meas} + 2 °C)	±1 %	±1.5 °C or ±1 %	±1.5 °C or ±1 %	±1.5 °C or ±1 %	±(0.5 % T _{Meas} + 2 °C)
Outputs analog: 0–20 mA / 4–20 mA / 0–5 V / 0–10 V / t/c (K/J)	■ / ■ / ■ / ■ / ■	■ / ■ / ■ / ■ / ■	■ / ■ / ■ / ■ / ■	■ / ■ / ■ / ■ / ■	■ / ■ / ■ / ■ / ■	■ / ■ / ■ / ■ / ■	■ / ■ / ■ / ■ / ■	■ / ■ / ■ / ■ / ■	■ / ■ / ■ / ■ / ■	■ / ■ / – / – / –
Second analog output	■	–	–	–	■	■	■	■	■	■
Interfaces: USB / RS232 / RS485 / Profibus / Ethernet / Modbus RTU / Relay	■ / ■ / ■ / ■ / ■ / ■	■ / ■ / ■ / ■ / ■ / ■	■ / ■ / ■ / ■ / ■ / ■	■ / ■ / ■ / ■ / ■ / ■	■ / ■ / ■ / – / ■ / ■ / ■	■ / ■ / ■ / ■ / ■ / ■	■ / ■ / ■ / ■ / ■ / ■	■ / ■ / ■ / ■ / ■ / ■	■ / ■ / ■ / ■ / ■ / ■	■ / ■ / ■ / – / ■ / ■ / ■
Signal processing: Peak / Valley / AVG / Advanced hold	■ / ■ / ■ / ■	■ / ■ / ■ / ■	■ / ■ / ■ / ■	■ / ■ / ■ / ■	■ / ■ / ■ / ■	■ / ■ / ■ / ■	■ / ■ / ■ / ■	■ / ■ / ■ / ■	■ / ■ / ■ / ■	■ / ■ / ■ / ■
T_{Amb} Head min.	–20 °C	–20 °C	–20 °C	–20 °C	0 °C	–20 °C	–20 °C	–20 °C	–20 °C	–20 °C
T_{Amb} Head max.	85 °C	85 °C	85 °C	85 °C	70 °C	85 °C	85 °C	85 °C	85 °C	200 °C (optional: 315 °C)
T_{Amb} Electronics max.	85 °C	85 °C	85 °C	85 °C	70 °C	85 °C	85 °C	85 °C	85 °C	1M: 60 °C / 2M: 50 °C
Functional inputs/ number	■ / 3	■ / 3	■ / 3	■ / 3	– / –	■ / 3	■ / 3	■ / 3	■ / 3	– / –
External emissivity adjustment	■	■	■	■	■	■	■	■	■	■
External background temperature control	■	■	■	■	■	■	■	■	■	■
Trigger input for reset of hold functions	■	■	■	■	■	■	■	■	■	■ (via I/O-Pins)
Digital I/O pins/ number	–	–	–	–	■ (via I/O pins)	–	–	–	–	■ / 3
Simultaneous analog and digital output	■	■	■	■	■	■	■	■	■	■
Alarm output as alternative to analog output	■	■	■	■	■	■	■	■	■	■
Additional alarm output/ switching output	■	■	■	■	■ (via I/O pins)	■	■	■	■	■ (via I/O-Pins)
Voltage supply	8–36 V DC	8–36 V DC	8–36 V DC	8–36 V DC	8–30 V DC / 5 V USB / max. 1.2 W	8–36 V DC	8–36 V DC	8–36 V DC	8–36 V DC	8–30 V DC or USB
Standard cable length	3 m	3 m	3 m	3 m	3 m	3 m	3 m	3 m	3 m	3 m
Cable length options	8 / 15 m	8 / 15 m	8 / 15 m	8 / 15 m	8 / 15 m	8 / 15 m	8 / 15 m	8 / 15 m	8 / 15 m	8 / 15 m