optris® CT XL 3M
TECHNICAL DATA

Non-contact temperature measurement from 100 °C to 1800 °C (212 °F to 3272 °F) 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 (185 °F) 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) front mountable at vacuum processes (up to 10^{-3} mbar)
Ambient temperature[1)]	–40 °C ... 85 °C (sensing head) (–40 °F ... 185 °F [sensing head]) –20 °C ... 85 °C (electronics) (–4 °F ... 185 °F [electronics])
Storage temperature	–40 °C ... 125 °C (sensing head) (–4 °F ... 257 °F [sensing head]) –40 °C ... 85 °C (electronics) (–40 °F ... 185 °F [electronics])
Relative humidity	10 – 95 %, non condensing
Vibration	IEC 68-2-6: 3 G, 11 – 200 Hz, any axis
Shock	IEC 68-2-27: 50 G, 11 ms, any axis
Weight	150 g (5.3 oz) (sensing head) 420 g (14.8 oz) (electronics)

Electrical specifications

Output / 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
Output / 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
Cable length	3 m (9.8 ft)
Current draw (laser)	Max. 100 mA
Power supply	8 – 36 V DC

Measurement specifications

Temperature ranges[2)] (scalable via programming keys or software)	100 °C ... 600 °C (212 °F ... 1112 °F) (3MH) 150 °C ... 1000 °C (302 °F ... 1832 °F) (3MH1) 200 °C ... 1500 °C (392 °F ... 2732 °F) (3MH2) 250 °C ... 1800 °C (482 °F ... 3272 °F) (3MH3)
Spectral range	2.3 µm
Optical resolution (90 % energy)	100:1 (3MH) 300:1 (3MH1 – 3MH3)
System accuracy[3)] (at ambient temp. 23 ±5 °C) (at ambient tem. 73 ±9 °F)	±(0.3 % of reading +2 °C) (±[0.3 % of reading +3.6 °F])
Repeatability (at ambient temp. 23 ±5 °C) (at ambient tem. 73 ±9 °F)	±(0.1 % of reading +1 °C) (±[0.1 % of reading +1.8 °F])
Temperature resolution	0.1 K
Exposure time[4)] (90 % signal)	1 ms
Emissivity/ Gain (adjustable via sensor or software)	0.100 – 1.100
IR window correction (adjustable via software)	0.100 – 1.000
Signal processing (parameter adjustable via software)	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 (77 °F)

[3)] ε = 1, Response time 1 s

[4)] With dynamic adaptation at low signal levels

Optris Infrared Sensing, LLC · 200 International Drive, Suite 170 · Portsmouth · NH 03801 USA
Phone.: 603-766-6060 · E-mail: sales@optris-ir.com · www.optris.com

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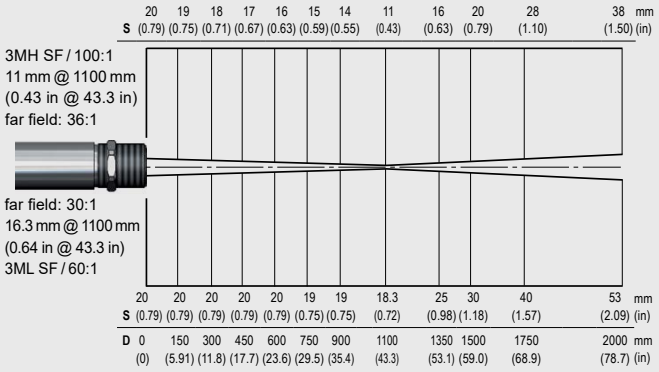
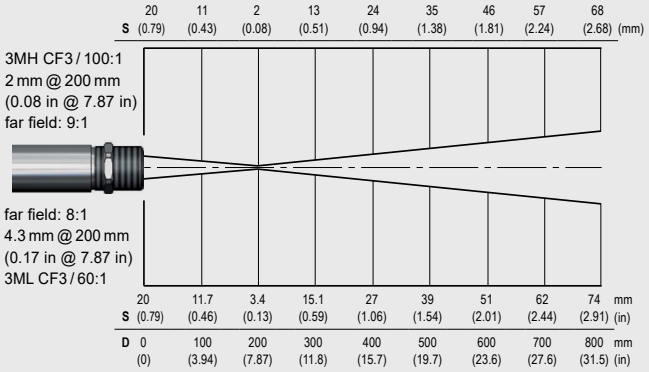
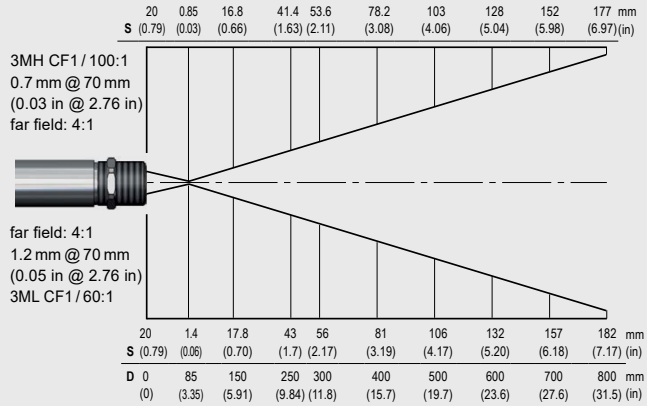
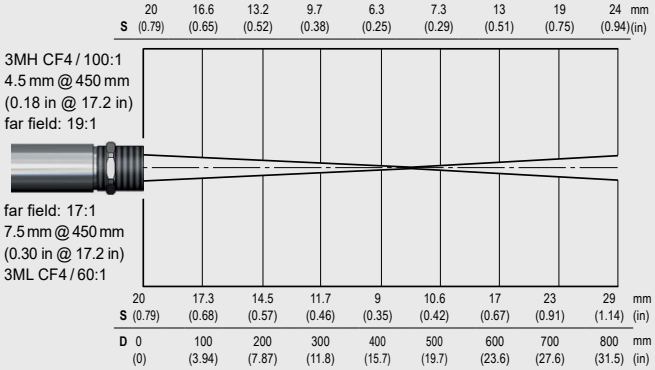
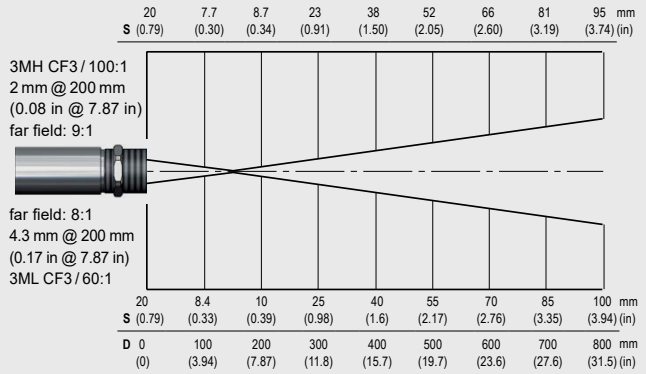
Optical parameter









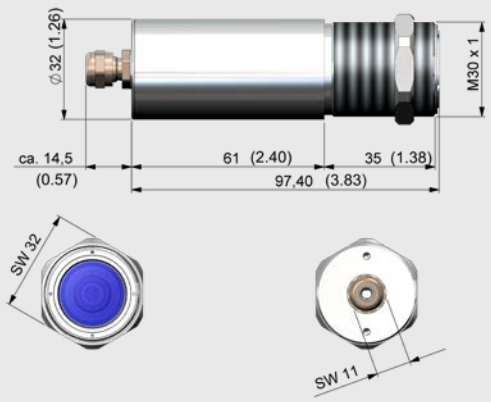


Further optics, D:S = 300:1

... SF	3.7 mm @ 1100 mm (0.15 in @ 43.3 in)
... CF2	0.5 mm @ 150 mm (0.02 in @ 5.91 in)
... CF3	0.7 mm @ 200 mm (0.03 in @ 7.87 in)
... CF4	1.5 mm @ 450 mm (0.06 in @ 17.7 in)
... FF	12 mm @ 3600 mm (0.47 in @ 141 in)

Dimensions

Sensing head



Electronics