



# CS LT and CSmicro Infrared Pyrometers

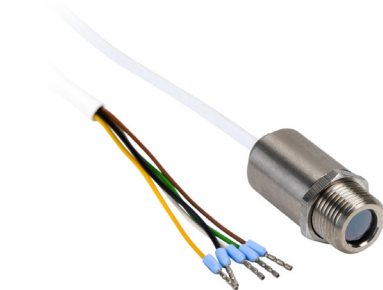
The Optris CS LT and CSmicro infrared pyrometer temperature sensors provide an accurate, non-contact way to measure temperature. Sensors come preconfigured and ready to use out of the box. They are available in different cable lengths and several output types, depending on model and configuration. CS LT models have a convenient Type K thermocouple or mV output for easy replacement of existing sensors\*. The CSmicro series comes in either mA or mV versions, multiple temperature ranges, and models ideal for measuring metals and metallic surfaces. Wires from both series are ferrule terminated for easy installation in most applications. All sensors feature tough, stainless-steel construction; fast response times as low as 8ms and easy adjustment of settings via the free IRmobile Android App or Windows software (CompactConnect). The Optris configuration cable ([ACCSMIACC](#)) is required to make changes to the sensor

settings. Non-contact temperature sensors, including the Optris pyrometers, are capable of measuring moving objects and can be used in applications in which traditional contact measurements are not possible, such as fast moving food products. Additionally, non-contact measurement can be used to count objects, like hot bottles passing by on a production line. Other advantages of non-contact temperature measurement include not influencing the actual temperature of the object, not causing damage or surface wear to the measuring location, and the ability to measure temperatures through glass with select models. Optris infrared temperature sensors are an excellent choice for applications that are moving, cannot be reached, are in areas that are too hot, or are near electrical interference.

\* **Thermocouple output disabled by default. ACCSMIACC configuration cable required to make all configuration changes.**



CS LT Series



CSmicro Series

## Features

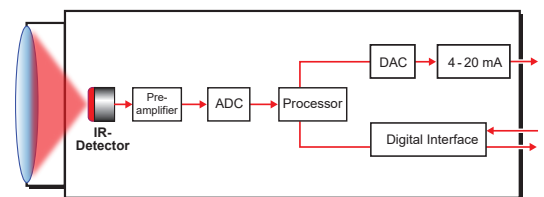
- Tough, stainless-steel construction
- German quality engineering and manufacturing
- Broad temperature sensing ranges
- Adjustable settings to fit many applications
- Fast response time: 8-150 ms dependent on model.
- Popular optical resolutions: 15:1, 22:1, 33:1 and 75:1 with spectral ranges of 8-14  $\mu\text{m}$ , 1.6  $\mu\text{m}$ , and 2.3  $\mu\text{m}$
- LED for alarm indication, aiming support, self-diagnostic or temperature code indication
- Wide power input range: 5-30 VDC
- Log and graph temperatures using free downloadable software

## Applications

- Temperature readings:
  - Of moving materials like films, bottles or baked goods
  - Areas of high ambient heat through a protective window
  - Objects in areas of high electromagnetic noise or that are carrying a voltage or current
  - Of small areas, like the surfaces of microcontrollers or electrical components, without having an influence on the measured temperature
  - Measure temperatures through glass on select models
  - Temperature measurements of metals and metallic surfaces
- Counting objects based on temperature difference
- Monitoring for fast changes in temperature
  - Plastic processing industries
  - Metal processing industries

## Pyrometer Operation

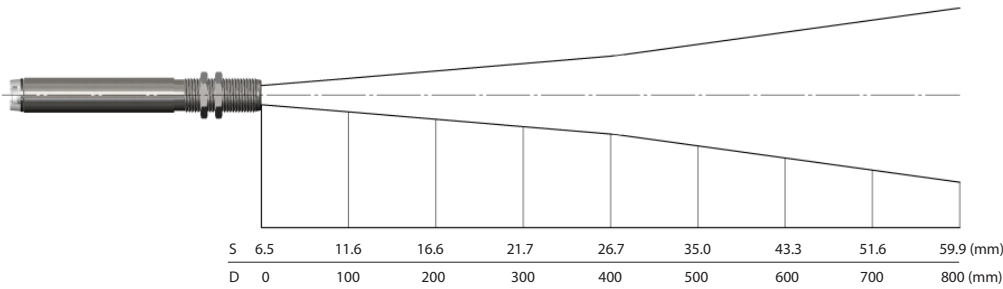
The Optris CS LT and CSmicro pyrometers input optics focus emitted infrared radiation onto an infrared detector. The detector generates an electrical signal that corresponds to the radiation, which is subsequently amplified and used for further processing. Digital signal processing transforms the signal into an output value proportional to the object's surface temperature, which is then provided as an analog output signal. The Optris pyrometers offered by AutomationDirect.com operate in the 8 to 14  $\mu\text{m}$  wavelength for general applications, 1.6  $\mu\text{m}$  wavelength for metal, and a 2.3  $\mu\text{m}$  for metallic surfaces and can measure through glass. The CSmicro 2M sensor is ideal for measuring the temperatures of low emissivity materials like metals. For 8-14  $\mu\text{m}$  wavelength sensors low emissivity materials may require a coating to increase their surface emissivity to measure the temperature accurately. Krylon® black high heat spray paint can be used to coat and provide a surface emissivity close to 0.95 and is heat resistant up to 600°F. In general, higher emissivity surfaces will provide a more accurate temperature reading when using a pyrometer. The area measured is given as a ratio of distance to spot diameter. The Optris CS LT and CSmicro pyrometers are available in a range of distance to spot diameters from 15:1 to 75:1. A close focus lens accessory is also available for the CS LT, CSmicro LT, and CSmicro LTH pyrometers for measuring small areas.





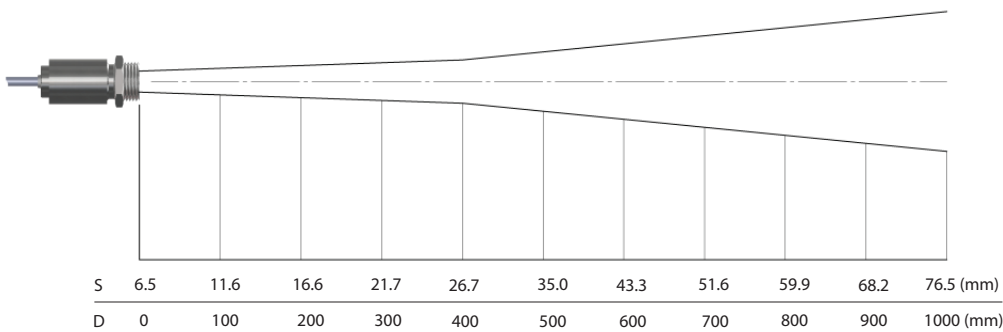
# CS LT and CSmicro Infrared Pyrometers

**D:S = 15:1 (26.7mm @ 400mm)**



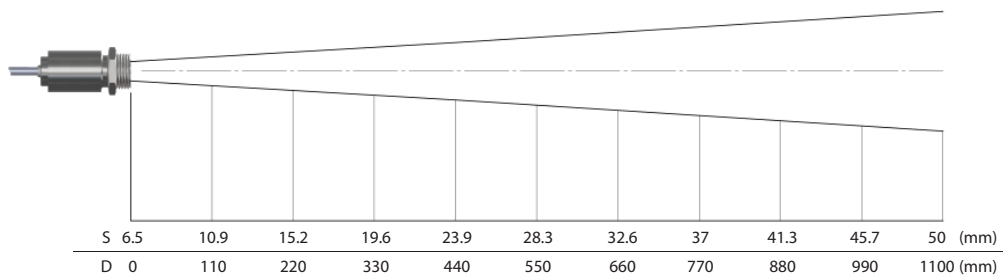
**CS LT distance to spot size**

**D:S = 15:1 (26.7mm @ 400mm)**



**CSmicro LT distance to spot size**

**D:S = 22:1 (50mm @ 1100mm)**

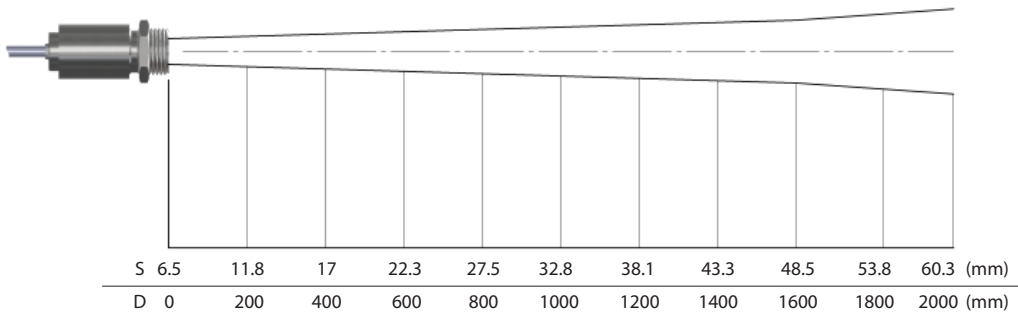


**CSmicro LTH / 3ML distance to spot size**



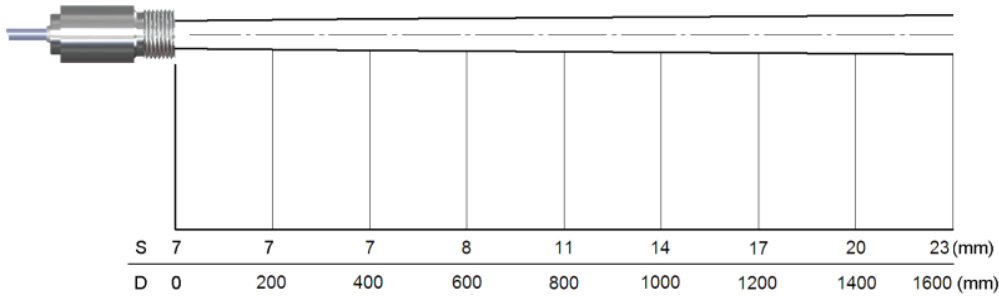
# CS LT and CSmicro Infrared Pyrometers

*D:S = 33:1 (48.5mm @ 1600mm)*



*CSmicro 3MH distance to spot size*

*D:S = 75:1 (16mm @ 1200mm)*



*CSmicro 2MH distance to spot size*



# CS LT Series Infrared Pyrometers

## Features

- Stainless-steel housing with M12x1 threaded end and two mounting nuts
- Up to 80°C (176°F) ambient temperature without cooling
- IP 63 environmental rating
- Selectable analog output 0 to 5/10 V scalable or thermocouple Type K
- Alarm output or digital output
- Green LED alarm indication, aiming support, self-diagnostic and temperature code indication
- Selectable signal processing (peak hold, valley hold, average or extended hold function with threshold and hysteresis)
- Easy configuration via IRmobile Android App and Windows software (CompactConnect)
- CE marked
- 2-year warranty



Part No. [OPTCSLT15SFCB8](#)

## Optris CS LT Series Infrared Pyrometer Selection

Part Number	Description	Measurement Range*	Spectral Response	Optical Resolution	Ambient Temp	Analog Output	Digital Output	Operating Voltage	End Mount	Cable	Wt (lb)	Price
<a href="#">OPTCSLT15SFCB1</a>	Optris CS LT infrared pyrometer	-50 to 1030°C (-58 to 1886°F)	8-14 μm	15:1 (26.7mm @ 400mm)	-20 to 80°C (-4 to 176°F)	0-5 VDC, 0-10 VDC, Type K thermocouple	Alarm or pulse output	5-30 VDC	M12x1 threaded	1m integral 7-conductor shielded	0.15	\$125.00
<a href="#">OPTCSLT15SFCB8</a>										8m integral 7-conductor shielded		

\* Factory default range 0 to 350°C. [ACCSMIACC](#) configuration cable required to make all configuration changes.

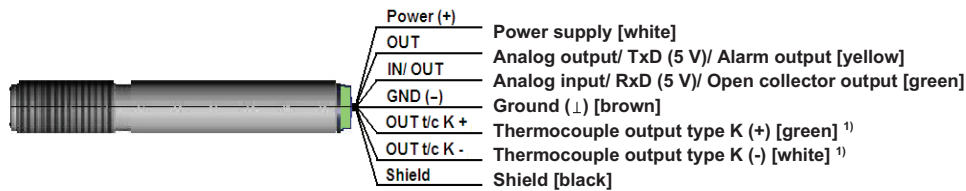
## Optris CS LT Series Infrared Pyrometer Information Links

Part Number	Drawing Link	Manufacturer Specs	Manufacturer Quick Start	Manufacturer Manual
<a href="#">OPTCSLT15SFCB1</a>	<a href="#">PDF</a>	<a href="#">PDF</a>	<a href="#">PDF</a>	<a href="#">PDF</a>
<a href="#">OPTCSLT15SFCB8</a>	<a href="#">PDF</a>	<a href="#">PDF</a>	<a href="#">PDF</a>	<a href="#">PDF</a>



# CS LT Series Infrared Pyrometers

## Wiring



<sup>1)</sup> The t/c wires are indicated with an additional cable marker to avoid wrong connections due to the identical cable colors of other wires (white, green). Thermocouple output disabled by default. ACCSMIACC configuration cable required to make all configuration changes.

## Pin Configuration

Used Pin		Function	
Out	In/Out		
X		Analog	0-5 V <sup>1)</sup> or 0-10 V <sup>2)</sup> / scalable
X		Alarm	output voltage adjustable; N/O or N/C
X		Alarm	3-state alarm output (three voltage level for no alarm, pre-alarm, alarm)
	X	Analog	Programmable open collector output (NPN type) [0-30 VDC/ 50 mA] <sup>4)</sup>
	X	Temp. Code	Temp. Code Output (open collector (NPN type)) [0-30 VDC/ 50 mA] <sup>4)</sup>
	X	Input	Programmable functions: <ul style="list-style-type: none"> <li>external emissivity adjustment</li> <li>ambient temperature compensation</li> <li>triggered signal output and peak hold function <sup>5)</sup></li> </ul>
X	X	Serial digital <sup>3)</sup>	uni- (burst mode) or bidirectional

<sup>1)</sup> 0...4.6 V at supply voltage 5 VDC; also valid for alarm output

<sup>2)</sup> Only at supply voltage  $\geq 11$  V

<sup>3)</sup> Inverted RS232, TTL, 9600 Baud

<sup>4)</sup> Loadable up to 500 mA if the mV output is not used

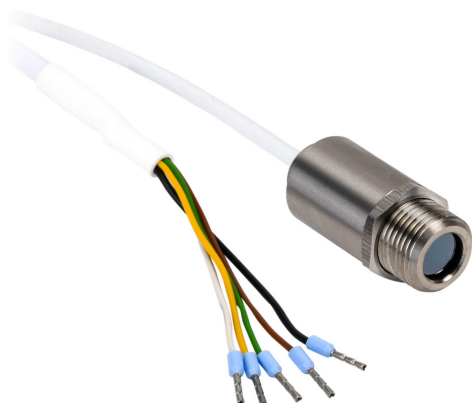
<sup>5)</sup> High level: > 0.8 V/ Low level: < 0.8 V



# CSmicro Series Infrared Pyrometers

## Features

- 5-30 VDC Operating voltage
- M12x1 threaded end mount
- Stainless-steel, 28mm long housing with M12x1 threaded end and mounting nut
- Very small sensor size for installation in tight spaces
- High ambient operating temperature up to 180°C (356°F) without cooling
- IP 65 (NEMA 4) environmental rating
- Scalable analog output: CSMV models: 0 to 5/10 V or CSMA models: 4 to 20 mA (two-wire); additional simultaneous alarm output
- Green LED alarm indication, aiming support, self-diagnostic, or temperature code indication
- Selectable signal processing (peak hold, valley hold, average, or extended hold function with threshold and hysteresis)
- Easy configuration via IRmobile Android App and Windows software (CompactConnect)
- CE marked
- 2-year warranty



Part No. [OPTCSMVL15SF33](#)



## Optris CSmicro Series Infrared Pyrometer Selection

Part Number	Description	Measurement Range	Factory Default Temp Range	Spectral Range Response	Optical Resolution	Ambient Temp		Analog Output	Digital Output	Cable	Wt (lb)	Price
						Sensing Head	Electronics*					
<a href="#">OPTCSMALT15SF0505</a>	Optris CSmicro LT Series infrared pyrometer	-50 to 1030°C (-58 to 1886°F)	0 to 350°C (32 to 662°F)	8-14 μm	15:1 (26.7mm @ 400mm)	-20 to 120°C (-4 to 248°F)	-20 to 75°C (-4 to 167°F)	4-20 mA	Alarm or pulse output	1m integral 5-conductor shielded cable	0.11	\$250.00
<a href="#">OPTCSMVL15SF0505</a>							-20 to 80°C (-4 to 176°F)	0-5 VDC, 0-10 VDC				\$250.00
<a href="#">OPTCSMALT15SF33</a>							-20 to 75°C (-4 to 167°F)	4-20 mA		6m integral 5-conductor shielded cable	0.35	\$292.00
<a href="#">OPTCSMVL15SF33</a>							-20 to 80°C (-4 to 176°F)	0-5 VDC, 0-10 VDC				\$292.00
<a href="#">OPTCSMALT22HSF0505</a>	Optris CSmicro LTH Series infrared pyrometer	-50 to 1030°C (-58 to 1886°F)	0 to 500°C (32 to 932°F)	8-14 μm	22:1 (50mm @ 1100mm)	-20 to 180°C (-4 to 356°F)	-20 to 75°C (-4 to 167°F)	4-20 mA**	Alarm or pulse output	1m integral 5-conductor shielded cable	0.15	\$370.00
<a href="#">OPTCSMVL22HSF0505</a>							-20 to 80°C (-4 to 176°F)	0-5 VDC, 0-10 VDC				\$370.00
<a href="#">OPTCSMALT22HSF33</a>							-20 to 75°C (-4 to 167°F)	4-20 mA**		6m integral 5-conductor shielded cable	0.35	\$412.00
<a href="#">OPTCSMVL22HSF33</a>							-20 to 80°C (-4 to 176°F)	0-5 VDC, 0-10 VDC				\$412.00
<a href="#">OPTCSMA3MLSF0505</a>	Optris CSmicro 3ML Series infrared pyrometer	50 to 350°C (122 to 662°F)	50 to 350°C (122 to 662°F)	2.3 μm	22:1 (50mm @ 1100mm)	-20 to 85°C (-4 to 185°F)	-20 to 75°C (-4 to 167°F)	4-20 mA	Alarm or pulse output	1m integral 5-conductor shielded cable	0.10	\$625.00
<a href="#">OPTCSMV3MLSF0505</a>							-20 to 80°C (-4 to 176°F)	0-5 VDC, 0-10 VDC				\$625.00
<a href="#">OPTCSMA3MLSF33</a>							-20 to 75°C (-4 to 167°F)	4-20 mA		6m integral 5-conductor shielded cable	0.35	\$667.00
<a href="#">OPTCSMV3MLSF33</a>							-20 to 80°C (-4 to 176°F)	0-5 VDC, 0-10 VDC				\$667.00

\* For Vcc (supply voltage) 5-12VDC/ at Vcc > 12 VDC the max. ambient temperature of the electronics is 65°C

\*\* See manual for grounding instructions based on installation.

ACCSMIACC configuration cable required to make all configuration changes.



# CSmicro Series Infrared Pyrometers

## Optris CSmicro Series Infrared Pyrometer Selection

Part Number	Description	Measurement Range	Factory Default Temp Range	Spectral Range Response	Optical Resolution	Ambient Temp		Analog Output	Digital Output	Cable	Wt (lb)	Price
						Sensing Head	Electronics*					
<a href="#"><u>OPTCSMA3MHSF0505</u></a>	Optris CSmicro 3MH Series infrared pyrometer	100 to 600°C (212 to 1112°F)	100 to 600°C (212 to 1112°F)	2.3 μm	33:1 (48.5mm @ 1600mm)	-20 to 85°C (-4 to 185°F)	-20 to 75°C (-4 to 167°F)	4-20 mA	Alarm or pulse output	1m integral 5-conductor shielded cable	0.10	\$475.00
-20 to 80°C (-4 to 176°F)							0-5 VDC, 0-10 VDC	\$475.00				
-20 to 75°C (-4 to 167°F)							4-20 mA	6m integral 5-conductor shielded cable		0.35	\$517.00	
-20 to 80°C (-4 to 176°F)							0-5 VDC, 0-10 VDC				\$517.00	
<a href="#"><u>OPTCSMA2MHSF0505</u></a>	Optris CSmicro 2MH Series infrared pyrometer	385 to 1600°C (725 to 2912°F)	385 to 1600°C (725 to 2912°F)	1.6 μm	75:1 (16mm @ 1200mm)	-20 to 125°C (-4 to 257°F)	-20 to 75°C (-4 to 167°F)	4-20 mA	Alarm or pulse output	1m integral 5-conductor shielded cable	0.10	\$510.00
-20 to 80°C (-4 to 176°F)							0-5 VDC, 0-10 VDC	\$510.00				
-20 to 75°C (-4 to 167°F)							4-20 mA	6m integral 5-conductor shielded cable		0.35	\$552.00	
-20 to 80°C (-4 to 176°F)							0-5 VDC, 0-10 VDC				\$552.00	

\* For Vcc (supply voltage) 5-12VDC/ at Vcc > 12 VDC the max. ambient temperature of the electronics is 65°C  
 ACCSMIACC configuration cable required to make all configuration changes.



# CSmicro Series Infrared Pyrometers

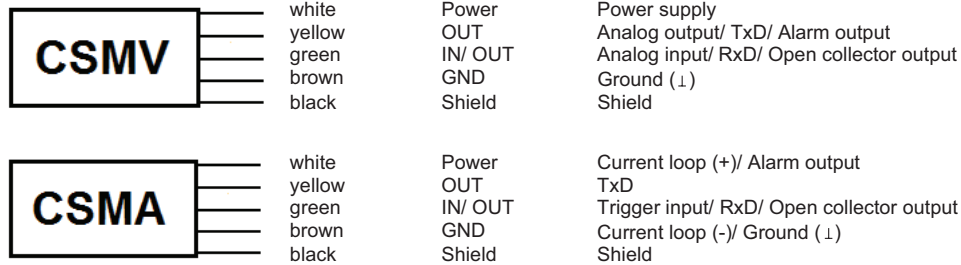
Optris CSmicro Series Infrared Pyrometer Information Links			
Part Number	Drawing Link	Manufacturer Specs	Manufacturer Manual
<a href="#">OPTCSMALT15SF0505</a>	<a href="#">PDF</a>	<a href="#">PDF</a>	<a href="#">PDF</a>
<a href="#">OPTCSMVL15SF0505</a>	<a href="#">PDF</a>	<a href="#">PDF</a>	<a href="#">PDF</a>
<a href="#">OPTCSMALT15SF33</a>	<a href="#">PDF</a>	<a href="#">PDF</a>	<a href="#">PDF</a>
<a href="#">OPTCSMVL15SF33</a>	<a href="#">PDF</a>	<a href="#">PDF</a>	<a href="#">PDF</a>
<a href="#">OPTCSMALT22HSF0505</a>	<a href="#">PDF</a>	<a href="#">PDF</a>	<a href="#">PDF</a>
<a href="#">OPTCSMVL22HSF0505</a>	<a href="#">PDF</a>	<a href="#">PDF</a>	<a href="#">PDF</a>
<a href="#">OPTCSMALT22HSF33</a>	<a href="#">PDF</a>	<a href="#">PDF</a>	<a href="#">PDF</a>
<a href="#">OPTCSMVL22HSF33</a>	<a href="#">PDF</a>	<a href="#">PDF</a>	<a href="#">PDF</a>
<a href="#">OPTCSMA3MLSF0505</a>	<a href="#">PDF</a>	<a href="#">PDF</a>	<a href="#">PDF</a>
<a href="#">OPTCSMV3MLSF0505</a>	<a href="#">PDF</a>	<a href="#">PDF</a>	<a href="#">PDF</a>
<a href="#">OPTCSMA3MLSF33</a>	<a href="#">PDF</a>	<a href="#">PDF</a>	<a href="#">PDF</a>
<a href="#">OPTCSMV3MLSF33</a>	<a href="#">PDF</a>	<a href="#">PDF</a>	<a href="#">PDF</a>
<a href="#">OPTCSMA3MHSF0505</a>	<a href="#">PDF</a>	<a href="#">PDF</a>	<a href="#">PDF</a>
<a href="#">OPTCSMV3MHSF0505</a>	<a href="#">PDF</a>	<a href="#">PDF</a>	<a href="#">PDF</a>
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<a href="#">OPTCSMV3MHSF33</a>	<a href="#">PDF</a>	<a href="#">PDF</a>	<a href="#">PDF</a>
<a href="#">OPTCSMA2MHSF0505</a>	<a href="#">PDF</a>	<a href="#">PDF</a>	<a href="#">PDF</a>
<a href="#">OPTCSMV2MHSF0505</a>	<a href="#">PDF</a>	<a href="#">PDF</a>	<a href="#">PDF</a>
<a href="#">OPTCSMA2MHSF33</a>	<a href="#">PDF</a>	<a href="#">PDF</a>	<a href="#">PDF</a>
<a href="#">OPTCSMV2MHSF33</a>	<a href="#">PDF</a>	<a href="#">PDF</a>	<a href="#">PDF</a>





# CSmicro Series Infrared Pyrometers

## Wiring



## Pin Configuration

Used Pin		Function	CSMV	CSMA
Out	In/Out			
X		Analog	0-5 V <sup>1)</sup> or 0-10 V <sup>2)</sup> / scalable	4-20 mA/ scalable (current loop between Power and GND pin)
X		Alarm	Output voltage adjustable; N/O or N/C	Output current adjustable; N/O or N/C (current loop between Power and GND pin)
X		Alarm	3-state alarm output (three voltage level for no alarm, pre-alarm, alarm)	-
	X	Alarm	Programmable open collector output (NPN type) [0-30 V DC/ 50 mA] <sup>4)</sup>	Programmable open collector (NPN type) [0-30 V DC/ 500 mA]
	X	Temp. Code	Temp. Code Output (open collector (NPN type)) [0-30 V DC/ 50 mA] <sup>4)</sup>	Temp. Code Output (open collector (NPN type)) [0-30 V DC/ 500 mA]
	X	Input	Programmable functions: <ul style="list-style-type: none"> <li>• external emissivity adjustment</li> <li>• ambient temperature compensation</li> <li>• triggered signal output and peak hold function <sup>5)</sup></li> <li>• reset of hold function <sup>6)</sup></li> </ul>	Programmable functions: <ul style="list-style-type: none"> <li>• triggered signal output and peak hold function <sup>5)</sup></li> <li>• reset of hold function <sup>7)</sup></li> </ul>
X	X	Serial digital <sup>3)</sup>	uni- (burst mode) or bidirectional	uni- (burst mode) or bidirectional

<sup>1)</sup> 0...4.6 V at supply voltage 5 VDC; also valid for alarm output

<sup>2)</sup> Only at supply voltage  $\geq$  11 V

<sup>3)</sup> Inverted RS232, TTL, 9600 Baud

<sup>4)</sup> 500 mA if the mV output is not used







<sup>5)</sup> High level: > 0.8 V/ Low level: < 0.8 V

<sup>6)</sup> Reset of peak or valley hold by High level at IN/ OUT pin (Low: open or GND / High: >2.4 V...11 V)

<sup>7)</sup> Reset of peak or valley hold by Low level at IN/ OUT pin (Low: GND / High: open or >1 V...11 V)



# CS Series Infrared Pyrometer Accessories

Optris CS Series Infrared Pyrometer Accessories					
Item Photo	Part No.	Description	Weight	Price	Drawing Link
	<b><u>ACCTCF*</u></b>	Optris close focus lens, for use with Optris CS LT and Optris CSmicro IR pyrometers.	0.03	\$55.00	<a href="#">PDF</a>
	<b><u>ACCTFB**</u></b>	Optris swivel mounting bracket, for use with Optris CS LT and Optris CSmicro IR pyrometers.	0.04	\$28.00	<a href="#">PDF</a>
	<b><u>ACCTMB**</u></b>	Optris mounting bolt, M12 x 1. For use with Optris CS LT and Optris CSmicro IR pyrometers and ACCTFB mounting bracket. M12x1 nut included.	0.08	\$28.00	<a href="#">PDF</a>
	<b><u>ACCSAP</u></b>	Optris standard air purge collar, for use with Optris CS LT and Optris CSmicro IR pyrometers. 3x5mm air hose connection.	0.07	\$38.00	<a href="#">PDF</a>
	<b><u>ACCTRAM*</u></b>	Optris right angle mirror, for use with Optris CS LT and Optris CSmicro IR pyrometers.	0.04	\$75.00	<a href="#">PDF</a>
	<b><u>ACCSMIACC</u></b>	Optris configuration cable, USB-C to 5-pin terminal, 3.7ft/1.1m cable length. For use with Optris CS IR pyrometers and PC or Android configuration software.	0.12	\$52.00	<a href="#">PDF</a>

\* Optical accessories require adjusting the sensors settings. See manual for parameter adjustment instructions.

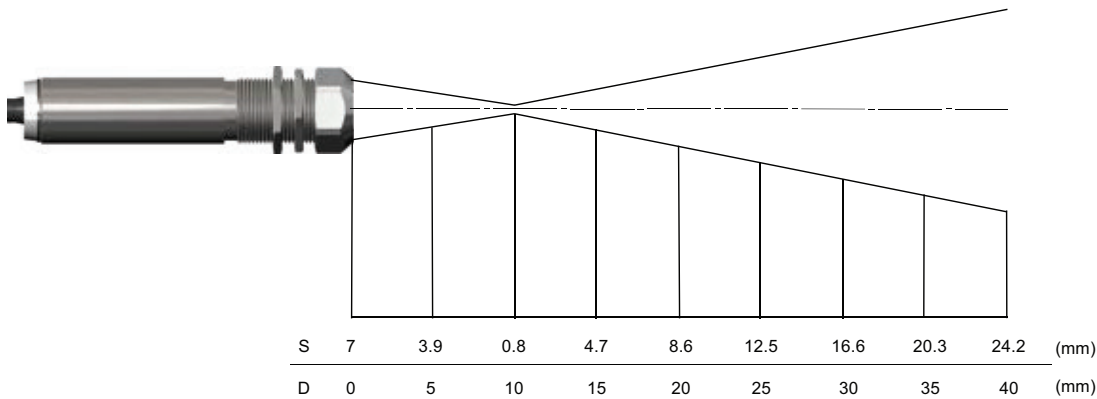
\*\* Mounting bracket and mounting bolt can be combined into a 2 axis mounting assembly.



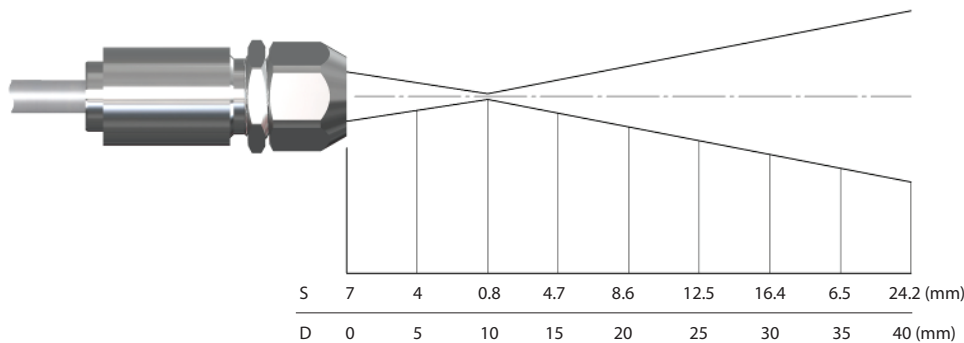
# CS Series Infrared Pyrometer Accessories

## Close Focus Lens Accessory (ACCTCF)

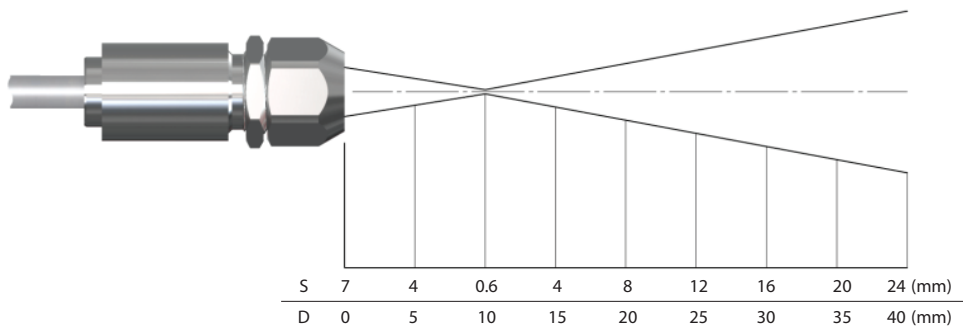
The Optris close focus lens accessory (ACCTCF) allows for focusing on a very small - less than 1mm - area and can be used on CS LT or the CSmicro LT and LTH series pyrometers. When the close focus lens is used, the sensor transmission setting must be set to 0.78. To change this value, the programming cable accessory (ACCSMIACC) is required (**sold separately**).



*Optical chart CS LT(15:1) with CF-lens (0.8 mm @ 10mm)/ D:S Far field = 1.4:1*



*Optical chart CSmicro LT (15:1) with CF lens (0.8 mm @ 10mm)/ D:S Far field = 1.4:1*



*Optical chart CSmicro LTH (22:1) with CF lens (0.6 mm @ 10mm)/ D:S Far field = 1.5:1*



# CS Series Infrared Pyrometer Accessories

## Right Angle Mirror Accessory ([ACCTRAM](#))

The right angle mirror allows measurements at a 90° angle. The mirror has a reflection of 96% (some deviation is possible) in combination with Optris CS LT or CSmicro series pyrometers. When using the mirror accessory, the emissivity value of the measurement object should be multiplied by 0.96. For example, an object with an emissivity of 0.85 would be multiplied by 0.96, giving a final emissivity of 0.816. In this example, the sensor emissivity should then be adjusted to 0.816. To change this value, the programming cable accessory [ACCSMIACC](#) is required (**sold separately**).

## Air Purge Accessory ([ACCSAP](#))

The air purge accessory should be used to keep the lens of the Optris CS LT or CSmicro sensors clean when there is heavy contamination in the air around the sensor. The Optris air purge accessory should be supplied approximately 2 to 10 liters per minute (l/min) of clean, oil-free air via the 3x5mm hose connection.

## Configuration Cable ([ACCSMIACC](#))

The Optris configuration cable (**sold separately**) provides a USB connection to either a Windows computer or an Android phone or tablet. Using either the IRmobile Android App or Windows software (CompactConnect), the Optris sensor can be configured, and the sensor values can be monitored and analyzed. The terminal block included with the configuration cable makes connecting the sensor and configuration cable easy by pressing the release with a screwdriver and inserting the wire of the sensor. When connecting the sensor to the configuration cable, match the wire color of the configuration cable with the sensor wire color. The configuration cable works on most Android devices running 5.0 or higher with a USB port that supports USB-OTG (On The Go). The free IRmobile Android App is available direct from the Google Play store and the CompactConnect Windows software can be downloaded from [Automationdirect.com](http://Automationdirect.com). See manual for additional information on data logging, graphing and serial communication.

## Scan to download the free IRmobile Android App



available on Google Play

