

CAPELLA C3 Series

Versatile, Portable 1-color and 2-color Pyrometers



Robust handheld IR thermometers for non-contact temperature measurement in the short-wave spectral range, especially suitable for measurements on shiny metals

- 2-color pyrometers switchable to 1-color mode
- Switchable bright green laser targeting light and through-lens view finder sighting
- Fast temperature measurements in < 1 milliseconds
- Precision pinpoint accuracy
- Focusable optics for measuring distances from 400 mm (4.5 inches) to 10 meters with ultra-small spot sizes
- Focusable optics for measuring distances up to 10 m
- Optional: Close-up lens for measurements in close range with spot sizes from 0.4 mm
- Data storage for up to 32000 measured values
- USB connectivity for easy data transfer to a PC
- 2 bright OLED displays for measurement information and additional data
- Robust cast aluminum housing with shock-absorbing rubber bumpers

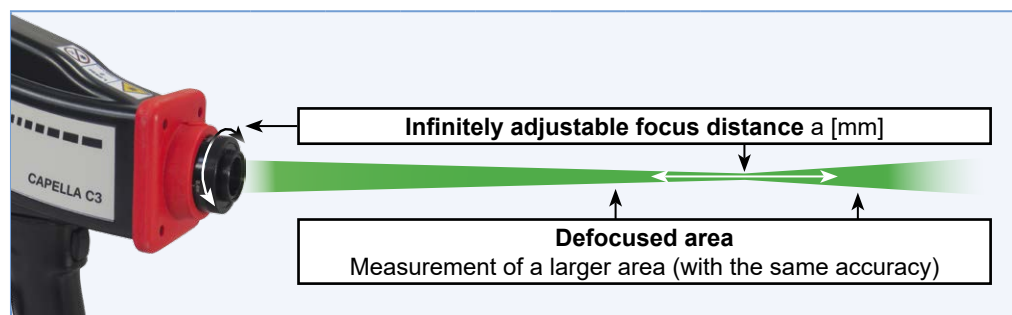
Technical Data

Model	1-color IR thermometers			2-color IR thermometers	
	C309	C316	C318	C311	C322
Temperature ranges	550–1400°C 600–1600°C 750–2500°C 900–3000°C *) 1000–3300°C *)	250–1300°C 350–1800°C 400–2500°C	180–1300°C	600–1400°C 750–1800°C 900–2500°C	300–1000°C 350–1300°C 500–1800°C
Spectral range	0.7-1.1 µm *) 0.87 µm	1.45-1.8 µm	1.65-2.1 µm	0.75-0.93 µm / 0.93-1.1 µm	1.45-1.65 µm / 1.65-1.8 µm
Detector	Silicon	InGaAs	InGaAs	2 x Silicon	2 x InGaAs
Response time t_{90}	< 1 ms (with dynamical adaptation at low signal levels)				
Exposure time	< 0.5 ms				
Uncertainty ($\epsilon = 1$, $t_{90} = 1s$, $T_A = 23^\circ C$)	Full-scale temperatures $\leq 2500^\circ C$: 0.25% of meas. value in $^\circ C + 1K$ Full-scale temperatures $> 2500^\circ C$: 0.5% of meas. value in $^\circ C$		0.4% of measured value in $^\circ C + 1K$ (min. $2^\circ C$)	0.5% of measured value in $^\circ C + 2K$	
Repeatability ($\epsilon = 1$, $t_{90} = 1s$, $T_A = 23^\circ C$)	0.1% of measured value in $^\circ C + 1K$		0.4% of measured value in $^\circ C + 1K$ (min. $1.6^\circ C$)	0.1% of measured value in $^\circ C + 1K$	
Serial interface	USB 2.0 (mini USB)				
Display	OLED display, 160 x 128 px, temperature resolution $0.1^\circ C / ^\circ F$				
Display temperatures	Instantaneous value, minimum value, maximum value (peak picker), average value				
Device parameters	Adjustable via 4 buttons on the device: emissivity (0.050–1.200), emissivity slope (only C311 / C322: 0.800–1.200), transmittance (5-100%), hi and lo alarm limit, selection of measuring locations, storage modes (only display without storage), 1 value automatically, 1 value with key confirmation, continuously (1 ms), interval (with adjustable measuring and pause times), language (English + German), temperature unit ($^\circ C / ^\circ F$). Adjustable via serial interface: measuring locations specification (100).				
Power supply	Rechargeable Li-Ion battery, 3.6 V, 3500 mAh, changeable. With protection circuit. Charge via USB port. Runtime > 8 h.				
Data storage	Up to 32000 measured values including date, time, measuring parameters, measuring location designation				
Sightings (switchable)	<ul style="list-style-type: none"> ■ Laser targeting light (green, $\lambda=515$ nm, $P < 1$ mW, laser class 2 according to IEC 60825-1) ■ Parallax-free through-lens view finder with aiming mark and temperature display, with adjustable brightness attenuation for high measuring temperatures (polarizer in the eyepiece) 				
Mounting thread	Tripod thread 1/4 "UNC				
Ambient temperature	0–60°C				
Relative humidity	Non-condensing conditions				
Housing/protect. class	Aluminum, IP65 to DIN 40 050, handle: plastic				
Weight	Approx. 1200 g (2.6 lb)				
CE label	According to EU directives for electromagnetic immunity				

Optics with Adjustable Focus Distance

At the focus point of the lens (focus distance) the spot size diameter is smallest.

Measurements made outside of the focus distance are also possible (in a shorter or longer distance than the focus distance), however, generally the spot size gets larger.



Model	Temp. ranges	Spot size Ø M [mm]	Focus distance a [mm] (all intermediate values adjustable)														
			Close-up lens	Standard settings													
			150	400	500	600	700	800	1000	1500	3000	4000	5000	10000			
C309	all	0.4															
C316	all																
C318	all																
C311	all																
C322	FSC $\geq 1300^\circ C$																
C322	FSC $< 1300^\circ C$	0.7	1.7	2.7	3	3.7	4	5.6	8	14	19	24	29	51			

FSC = Full-scale temperatures

Expanding Possibilities

The CAPELLA C3 series of hand-held, battery operated 1- and 2-color IR thermometers brings all the advanced measurement capabilities of Sensortherm fixed mount pyrometers to the workplace in portable form. The comprehensive model range of the series includes short-wave devices for precise measurement of metals, welding, molten glass, semi-conductors and ceramics. Measurement of molten metals and pouring streams is simplified with C311 models.

Two-color instruments use two wavelengths simultaneously for the measurement. The temperature is calculated out of the radiation ratio between the two wavelengths.

2-color sensors ordinarily perform under difficult plant conditions; dust, water vapor and other disturbances within the measurement field. Reduction of the incoming radiation is compensated since the radiation ratio between the wavelengths stays the same. The use of such devices has become indispensable in the stationary world of pyrometers. Now they are also available for portable measurements.

Innovative Features

Temperature display:

- Color display for better visibility
- Main display selectable: instantaneous value, maximum, minimum or average value.
- Emissivity or emissivity slope directly adjustable (quick menu)
- Temperature display in view finder

Storage settings:

- Measured value display without storage
- Single value or permanent storage
- Storage of measurement intervals

Connections / data transmission:

- USB for battery charging and reading data

Flexible usage:

- Photo tripod thread for stationary measurements



Dual sighting device:

- View finder with eye protection filter
- Bright green laser targeting light for spot size marking even on hot glowing objects

Adjustable optics:

- Smallest possible spot size in the entire distance range

Industrial housing:

- Robust aluminum housing with rubber bumper

Model designs:

- Radiation pyrometers (1-color devices)
- 2-color pyrometers

Versatile Sighting Methods

Precision measurement of objects is assured with the two switchable sighting methods using the Capella C3 Series. Choose from bright green laser targeting or parallax-free through-lens view finder with adjustable brightness, aiming reticule and integrated temperature displays.

The vivid green laser is highly visible on hot (red) glowing targets and defines the center of the spot size. An adjustable polarizing filter darkens and protects the eye when viewing extremely bright targets.



Switching between laser targeting light and view finder

Intuitive Options for Measurement, Display and Evaluation

The parameter quick access and the menu:

- Measurement parameters can be changed directly in the main display.
- All measurement and device settings can be found in the menu. Operation is via 4 adjustment buttons.

Two display formats:

- Large display for quick measurement information.
- Detailed display for additional parameter measurement information

Some special features:

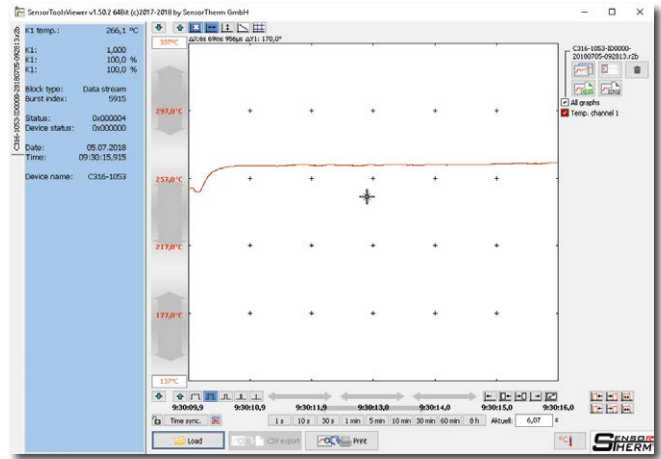
- Define measuring locations: Setting of measurement locations with predefined measuring parameters and operation modes. These can be easily selected on the device to store all measured values including date and time. Data can easily be sorted for quick retrieval.
- Current value, maximum, minimum and average temperature are displayed simultaneously.
- Several operating modes: The measurement button can be adapted to the requirements:
 - Display mode: No storage, display only.
 - Auto save: Press trigger button and save a value automatically.
 - Continuous measurement: with storage as fast as possible (1 ms a measured value).
 - Interval mode: Measurement with definable measuring and pause times.
- Alarm display for measurement temperature overflow or underflow.
- IR signal indicator: On 2-color instruments only, an IR signal indicates if there is sufficient signal for reliable measurements.



Powerful and Intuitive *SensorTools* Software

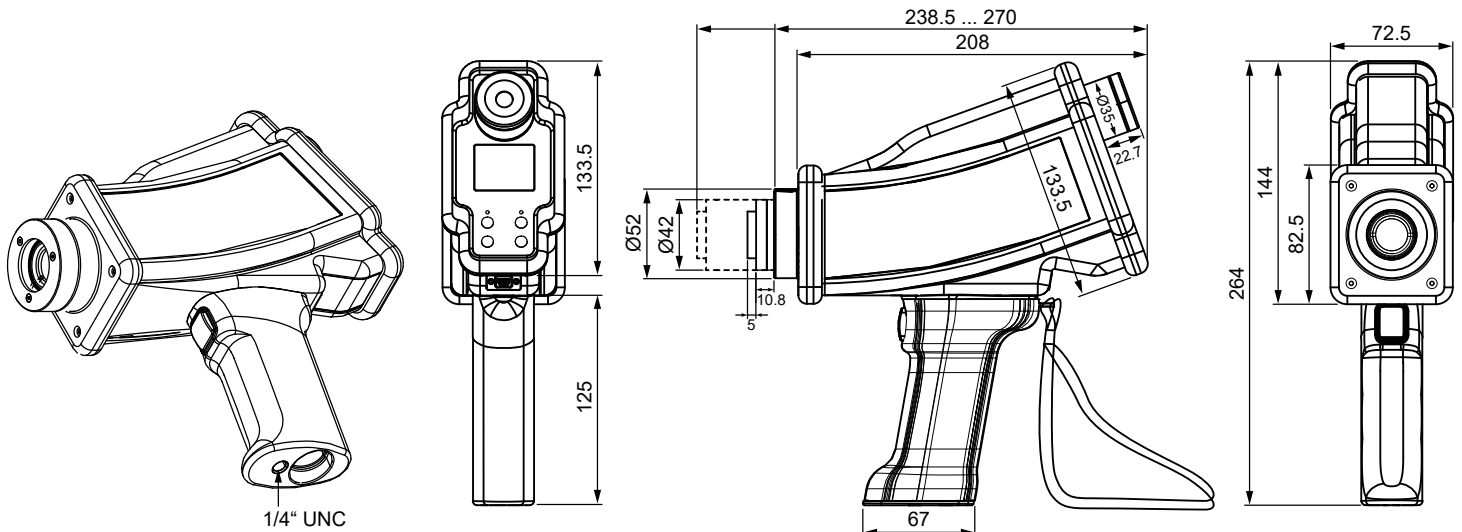
Intuitive *SensorTools* PC software:

- Display of data including time stamp and measurement parameters
- Pyrometer parameters settings
- Adjustment of additional pyrometer settings, not available on the device
- Management of measuring locations and material lists:
Define measuring location designations or material lists with preset measuring parameters and storage mode
- Export of measured values into csv files
- Transfer of pyrometer settings to other devices
- Save and print settings
- Create service and parameter files to display all device and software settings



Dimensions

Dimensions in mm



Reference Information

When ordering, the model and the required temperature range must be specified.

Scope of delivery:

Device with rechargeable Li-Ion battery and wrist strap. USB cable, USB charger (power adapter), protective carrying case, factory certificate according to DIN-EN ISO9001:2015, user manual, *SensorTools* software.

Accessories:

- OC-C3-V0 Close-up lens
- On request Spare rechargeable Li-Ion battery
- On request IEC 17025 calibration certificate



Sensortherm reserves the right to make changes in scope of technical progress or further developments.

Datasheet_Capella_C309_C316_C318_C311_C322 (Dec. 07, 2021)

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