PROCESS SENSORS™ CORPORATION

SENSOR THERM

Capella C3 Series

Versatile, Portable 1- and 2-color Infrared Thermometers



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 ms
- Very high pinpoint accuracy
- Focusable optics for measuring distances up to 10 m
- Measuring of smallest objects from 1.2 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	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 (ε = 1, t_{90} = 1s, T_A = 23°C)	Full-scale temperatures ≤2500°C: 0.25% of meas. value in °C+1K Full-scale temperatures >2500°C: 0.5% of meas. value in °C		0.4% of measured value in °C +1K (min. 2°C)	0.5% of measured value in °C +2K	
Repeatability (ε = 1, t_{90} = 1s, T_A = 23°C)	0.1% of measured value in °C + 1K		0.4% of measured value in °C +1K (min. 1.6°C)	0.1% of measured value in °C +1K	
Serial interface	USB 2.0 (to mini USB)				
Display	OLED display, 160 x128 px, temperature resolution 0.1°C / °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: 0.650–1.450), 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 (°C/°F). Adjustable via serial interface: specify measuring locations (100), response time (<1 ms–10s).				
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)	■ Laser targeting light (green, λ=515 nm, P< 1 mW, laser class II 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 focal point of the lens (focal 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) to determine the average temperature of a bigger spot.

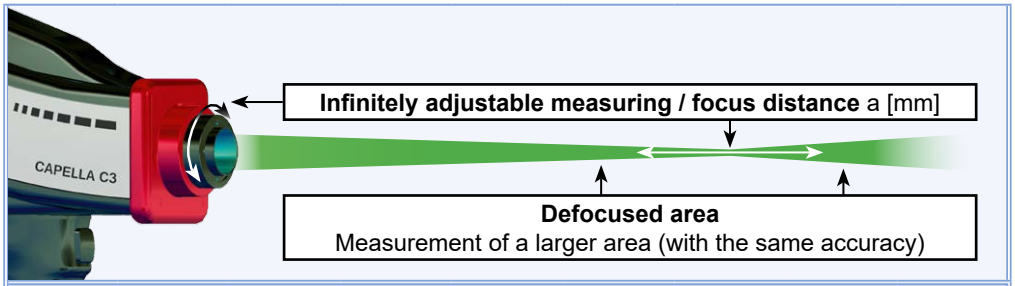


Table values are exemplary, intermediate values must be interpolated

Model	Temp. ranges		Measuring / focus distance a [mm]								
			380	500	700	1000	2000	3000	4000	5000	10000
C309	all	Spot size Ø M [mm]	1.2	1.5	2	2.8	5.8	7.8	11	14	29
C316	all										
C318	all										
C311	all										
C322	FSC ≥ 1300°C										
C322	FSC < 1300°C		1.7	2.7	3.7	5.6	10	14	19	24	51

FSC = Full-scale temperatures

Aperture Ø: FSC ≤ 1400°C: 15 mm; FSC>1400°C: 8 mm

Expanding Possibilities

The new 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.
In addition to the common 1-color devices, 2-color pyrometers are also available. A 2-color instrument is using simultaneously two wavelengths for the measurement. The temperature is calculated out of the radiation ratio between the two wavelengths.
2-color instruments perform extraordinary under difficult circumstances like dust, fog and other disturbances within the measurement way. All neutral reduction of the radiation is compensated since the ratio between the wavelengths stays stable. 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

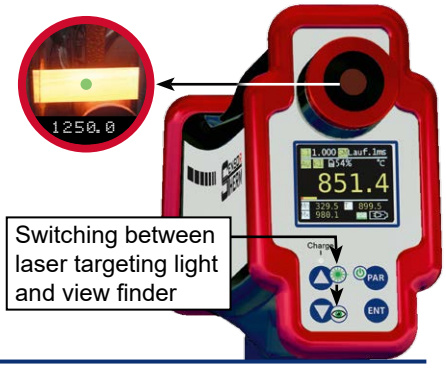
Industrial housing:
- Robust aluminum housing with rubber bumper

Model designs:
- Radiation pyrometers (1-color devices)
- 2-color pyrometers (switchable to 1-color devices)

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.

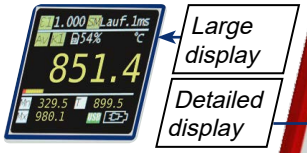
The vivid green laser is highly visible on hot (red) glowing targets and defines the center of the spot size. An adjustable polarizing filter darkens and protects the eye when viewing extremely bright targets.



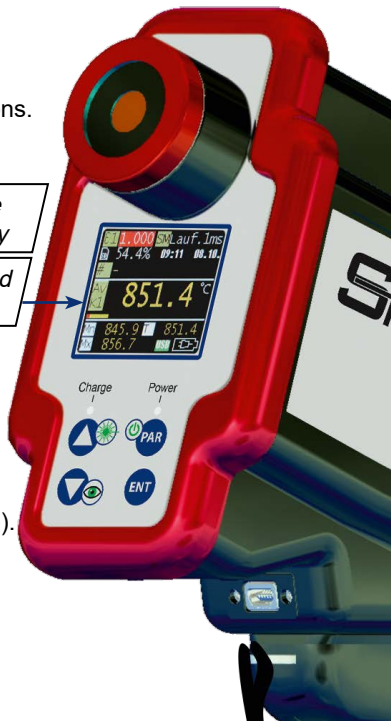
Intuitive Options for Measurement, Display and Evaluation

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



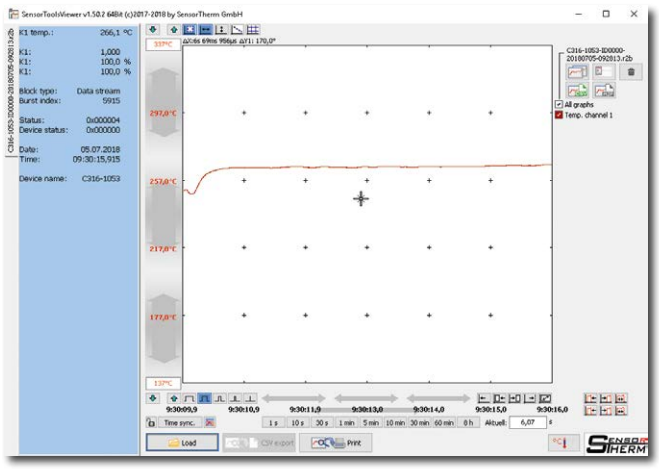
Some special features:
- Define measuring locations: Setting of measurement locations with predefined measuring parameters and operation modes. These can be easily selected on the device to store all measured values including date and time. Data can easily be sorted for quick retrieval.
- Current value, 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: 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: Informs at 2-color devices whether there is sufficient signal for reliable measurements.



Powerful and Intuitive *SensorTools* Software

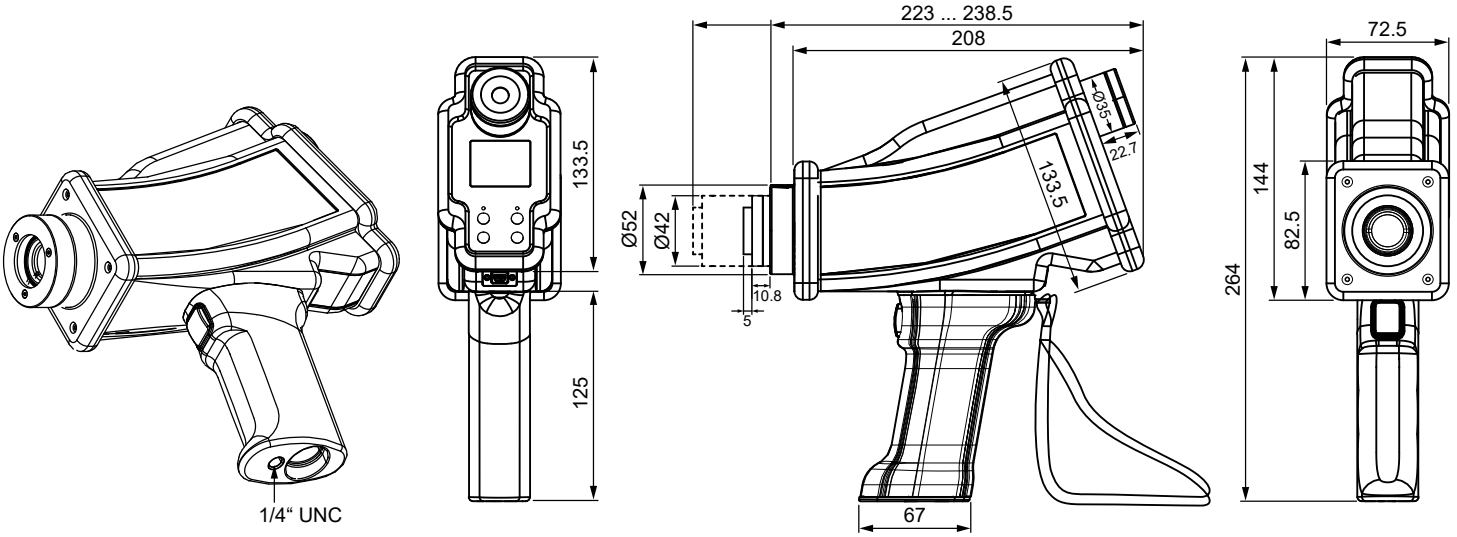
Intuitive *SensorTools* PC software:

- 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 are to specify.

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:
Spare rechargeable Li-Ion battery
DAkkS calibration certificate

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

Datasheet_Capella_C309_C316_C318_C311_C322 (Nov. 14, 2018)

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