Series Capella C3

Versatile, Portable Handheld Radiation and Ratio Pyrometers

CAPELLA C3

Min 299.9
Max 1500.3
1250 °C
ε 1.000 [89%]

Charge **Power**

PAR

ENT

CAPELLA C3

Robust handheld pyrometers 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 radiation pyrometers**
- ■ **Through-lens view finder sighting with temperature display or laser targeting light**
- ■ **Fast temperature measurements in < 1 ms**
- ■ **Very high accuracy**
- ■ **Adjustable optics for measuring distances up to 10 m**
  with small spot sizes from 1.2 mm
  at close range with spot sizes from 0.3 mm
- ■ **Measured value storage for up to 32000 measured values**
  including measurement parameters
- ■ **Clear display with measurement information and additional data**
- ■ **Bluetooth and USB connectivity for easy data transmission to a PC**
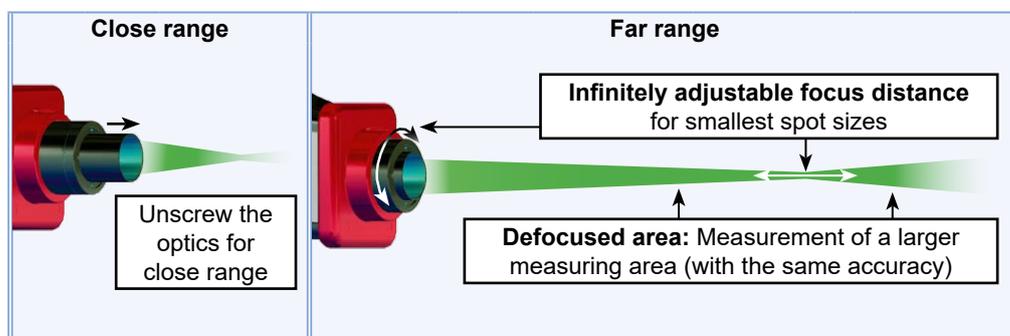- ■ **Robust cast aluminum housing with rubber bumpers**

Technical Data

Model	1-color IR thermometers			2-color IR thermometers and 1-color mode	
	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 ($\varepsilon = 1$, $t_{90} = 1s$, $T_A = 23°C$)	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 ($\varepsilon = 1$, $t_{90} = 1s$, $T_A = 23°C$)	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) and Bluetooth 4.0, switchable				
Display	OLED display, 160x128 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, 3.7 V, 2600 mAh, changeable. With protection circuit. Charge via USB port. Battery life > 8 h				
Data storage	Up to 32000 measured values including date, time, measuring parameters, measuring location designation				
Sightings (swichable)	■ 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	No condensing conditions				
Housing / protect. class	Aluminum, IP65 to DIN 40 050, handle: plastic				
Weight	Approx. 1200 g				
CE label	According to EU directives for electromagnetic immunity				

Optics with Easy Focus Adjustment and High Optical Resolution

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

Close range

Unscrew the optics for close range

Far range

Infinitely adjustable focus distance for smallest spot sizes

Defocused area: Measurement of a larger measuring area (with the same accuracy)

Model	Temp. ranges	Spot size Ø M [mm]	Measuring / focus distance a [mm] (adjustable)												
			116	130	150	170	380	500	700	1000	2000	3000	4000	5000	10000
C309	all		0.3	0.4	0.5	0.6	1.2	1.5	2	2.8	5.8	7.8	11	14	29
C316	all														
C318	FSC ≥ 1200°C														
C311 / C322	FSC ≥ 1300°C														
C318	100–700°C		0.5	0.7	0.8	1	1.7	2.7	3.7	5.6	10	14	19	24	51
C322	300–1000°C														

FSC = Full-scale temperatures   Aperture Ø: FSC ≤ 1400°C: 15 mm; FSC>1400°C: 8 mm

Completely New Possibilities

With the C3 models of the Capella series, finally, a very robust portable measurement option is available, which equates in the technical data to those of the stationary devices. For measurements of the molten metal or on the pouring stream, the C311 is preferably used.

In addition to the commercially available 1-color devices, 2-color pyrometers are also available. These devices measure in two spectral ranges simultaneously (at two wavelengths) and determine the temperature by forming the radiation ratio.

In this method it is not necessary to know the emissivity of the target material or fulfill the sensor's spot size with the target. The use of such devices has become indispensable in the stationary world of pyrometers, as a hand-held device it is virtually unique.

Features

Informative display:
- Clear OLED color display with all measurement information
- Temperature display in view finder
- Select additional displays: active limit value outputs, maximum, minimum or average values

Familiar device operation:
- All settings directly on the device
- Switchover between single / permanent measurement

Modern connections to the supplied software:
- USB for charging and data readout
- Bluetooth for wireless data transmission

Unique model designs:
- 2-color pyrometers (2-color + 1-color devices)
- Radiation pyrometers (1-color devices)

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

Fast object focusing:
- Easy focusing to measuring distance with the smallest focus
- Optics extendable for close range

Harsh environmental conditions:
- Robust aluminum housing with rubber bumper
- Continuous ambient temperature compensation

Flexible usage:
- Photo tripod thread for stationary measurements

Sighting Methods

With the sighting methods, the position of the measuring object is targeted, which is to be measured. Capella pyrometers have the right sighting equipment for every application:

- The **through-lens view finder** for sighting of objects. A green dot in the view finder precisely defines the spot size, which is measured.
  For extremely bright targets, an adjustable polarizer darkens and protects the eyes.

- The **laser targeting light** shows a bright, green light spot on the target, which shows the center of the spot size.
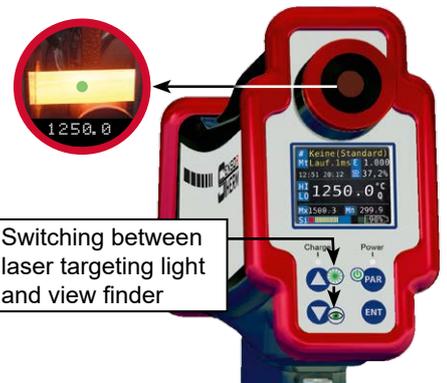
Switching between laser targeting light and view finder

Intuitive Options for Measurement, Display and Evaluation

The quick menu and the menu:
- Measurement parameters can be changed directly in the display without a menu call up.
- All measurement and device settings can be found in the menu, it is operated via 4 adjustment buttons.

Two display formats:
- Large display for clear measurement information.
- Detailed display for measurement information with additional parameters.

Large display

Detailed display

Some special features:
- Define measuring locations: Measuring location designations can be assigned under which the measuring parameters and operating mode can be predefined. These can be easily selected on the device to store all measured values including date and time. Via software evaluation, these data are sorted to find again.
- At the same time or optionally, display current value, maximum, minimum average temperature
- 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.
- Signal strength bar: Informs if there is enough signal for a safe data logging.
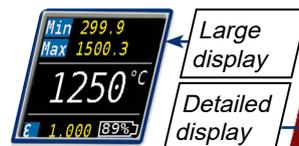
Software *SensorTools*

The PC software *SensorTools*:
Standard software for all pyrometers for:

- Display of measured values of all channels:
  2-color temperature + 1-color temperatures,
  at the same time, graphical and numerical
- Measured value recording
- Processing the results
- Displaying internal device temperature
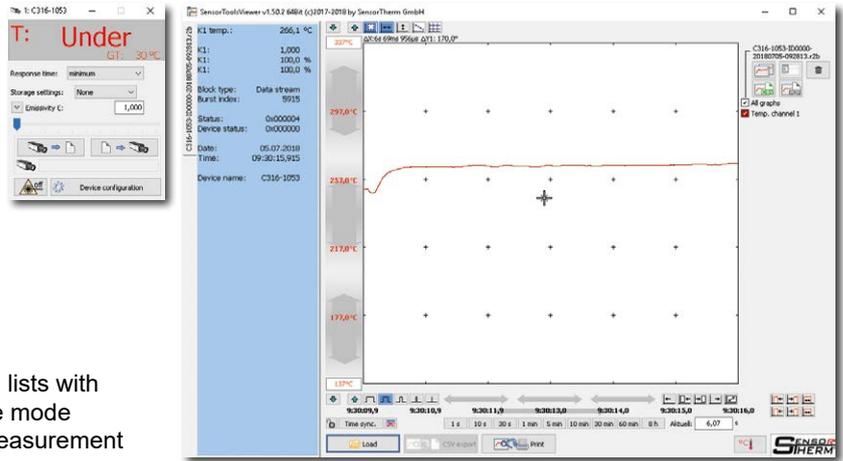
Program functions:

- Changing pyrometer parameters and
  perform advanced pyrometer settings
- Define measuring location designations or material lists with
  preset measuring parameters and required storage mode
- Read out measured values with time stamp and measurement
  parameters from the Capella
- Export measured values filtered into csv files
- Print, save, and transfer pyrometer settings to other devices
- Creation of service and parameter files with all device data and software settings for remote diagnostics

Dimensions

Dimensions in mm

1/4" UNC

238.5 ... 288.5
223
208
Ø35
22.7
133.5
Ø52
Ø42
Ø28
10.8
5
67
133.5
125
72.5
144
82.5
264
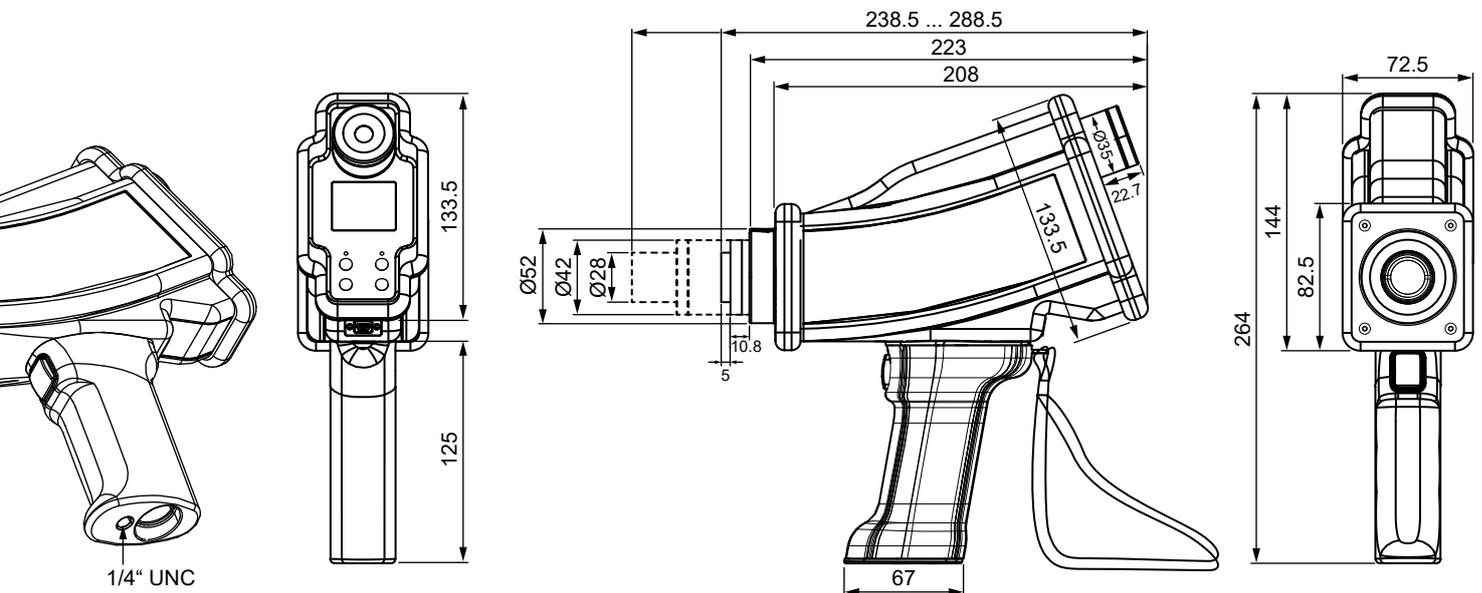
Reference Information

Specify model with required temperature range.

Scope of delivery:
Device with rechargeable Li-ion battery, wrist strap, USB cable, USB charger (power adapter), protective carrying case,
calibration certificate ISO9001, user manual, *SensorTools* software.

Accessories:
Rechargeable Li-ion replacement battery

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