optris
infrared measurements

Comparison Sheet

Classic CT LT vs. New CTi LT –
Differences between the pyrometer series

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YOUR RELIABLE PARTNER FOR
INFRARED TEMPERATURE MEASUREMENTS

The optris CT LT pyrometer series, which has been used successfully in industry worldwide for over 20 years, was significantly optimized and upgraded in 2025 with the introduction of the new CTi LT pyrometer.

The optris CTi LT pyrometer is the next generation of industrial infrared temperature measurement technology. It combines proven reliability with modern connectivity for precise non-contact temperature monitoring in industrial settings and is the industrial standard for non contact temperature sensing.

This comparison sheet highlights the differences between the CT LT and CTi LT series and explains why the CTi is the new pyrometer standard in the industry.

Features and advantages of the new optris CTi LT Series:

- **Extended temperature range**
- **Higher sampling rate, improvement by factor 45, from 2.2 ms down to 100 µs**
- **Faster response time**
- **Extended interface options:**
  Ethernet TCP, Modbus TCP, EtherNet/IP, Profinet, EtherCAT, I/O link
- **Improved repeatability, lower NETD**
- **USB-C built in (no need of USB-kit)**
- **More flexibility for I/O pins**
- **Advanced software: CompactPlus Connect**
- **Exchangable sensing head (change to LThot or LTex possible)**
- **Online firmware update**
- **No short circuit of outputs possible**
- **Easy switch from CT to CTi devices -> Same optics, same dimension**
- **Fully compatible with all mechanical accessories of CT**

Comparison of device specifications

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	CT LT Series	CTi LT Series
Measurement specifications		
Temperature Range		
LT02	-50 to 600 °C	-50 to 650 °C
LT15	-50 to 600 °C	-50 to 800 °C
LT22	-50 to 975 °C	-50 to 1050 °C
Spectral range	8 – 14 µm	
Detector	Thermopile	
Measurement Principle	Single Color	
Response Time	150 ms	40 ms (LT02) 115 ms (LT15 & LT22)
Exposure Time	150 ms	40 ms (LT02) 115 ms (LT15 & LT22)
Sampling Frequency	70 Hz	10 kHz
Accuracy	± 1% or ± 1°C	
Repeatability	± 0.5 % or ± 0.5 °C	LT02: ± 0.2 °C or ± 0.1 % LT15: ± 0.1 °C or ± 0.1 % LT22: ± 0.15 °C or ± 0.1 %
Temperature Coefficient	± 0.05 K/K oder ± 0.05 % / K	
Thermal Sensitivity (NETD)		
LT02	100 mK	25 mK
LT15	50 mK	25 mK
LT22	50 mK	35 mK
Warm-up time	10 min	
Emissivity | Transmissivity | Reflectivity	0.100 – 1.100	0.05 – 1.100
Capabilities	Average Peak hold Valley hold Advanced peak / valley hold with threshold and hysteresis Triggered signal output Triggered peak / valley hold function (adjustable via software)	
General specifications		
Operation	Autonomous Standalone	
Size electronic box	122 mm x 70 mm x 30 mm	
Size Sensing head	Ø12mm x 35 mm, M12x1	
Exchangable Sensing Head	Yes, CT LT heads only	Yes, across CTi LT, LThot, LTex, G5 group
Housing Material	Stainless Steel	
Weight	Sensing head: 40 g Electronics: 420 g	
Cable length	1 m (standard), 3 m, 8 m, 15 m	
Country of Origin	Germany	

Comparison of device specifications

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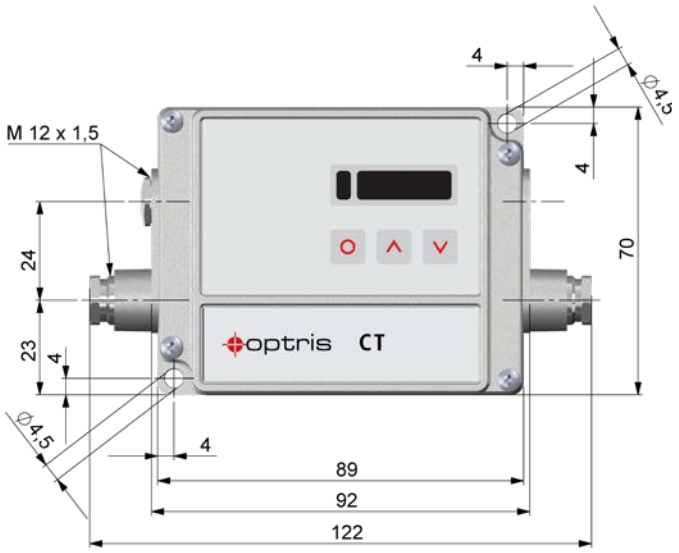
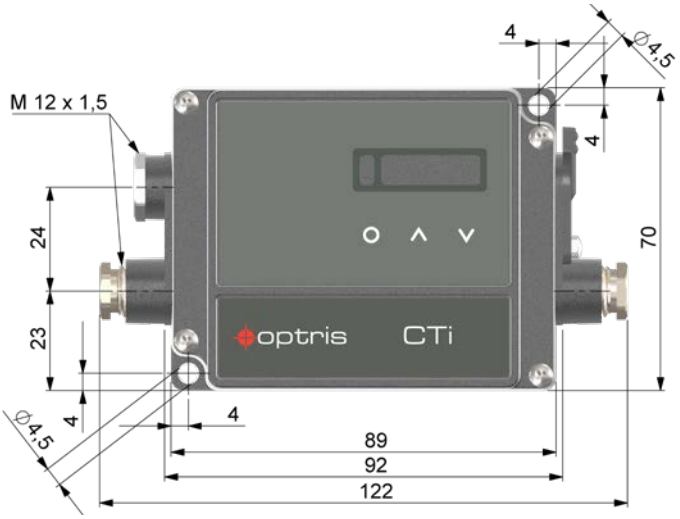
	CT LT Series		CTi LT Series	
General specifications				
	Sensing head	**Electronics**	**Sensing head**	**Electronics**
Operating Temperature LT02 LT15 LT22	 -20 °C … 120 °C -20 °C … 180 °C -20 °C … 180 °C	-20 °C … 85 °C	 -20 °C … 120 °C -20 °C … 180 °C -20 °C … 180 °C	-20 °C … 85 °C
Storage Temperature LT02 LT15 LT22	-40 °C … 120 °C	-40 °C … 85 °C	 -40 °C … 120 °C -40 °C … 180 °C -40 °C … 180 °C	-40 °C … 85 °C
Relative humidity	10 – 95%, non condensing			
Protection Class	IP 65, NEMA 4 (except terminal connector)			
EMC	2014/30/EU			
Shock	IEC 60068-2-27 (25 G and 50 G)			
Vibration	IEC 60068-2-6 (sinus shaped) IEC 60068-2-64 (broadband noise)			
Standards	CE, UKCA, RoHS			
Power Supply	8-36 V DC		8-30 V DC	
Power Consumption	1.2 W			
Input / Output				
Interfaces	USB RS232 RS485 Ethernet TCP Modbus TCP Modbus RTU EtherNet/IP Profinet Relay Profibus DP		USB-C (built-in) RS232 RS485 Ethernet TCP Modbus TCP Modbus RTU EtherNet/IP Profinet Relay EtherCAT I/O link	
Supported Protocols	USB 2.0 Optional: EtherNet/IP / Ethernet TCP / Modbus TCP / Modbus RTU / Profinet / Profibus		USB 2.0 Optional: EtherNet/IP / Ethernet TCP / Modbus TCP / Modbus RTU / Profinet	
Functional inputs / I/O Pins	F1-F3; software programmable for the following functions: • external emissivity adjustment • ambient temperature compensation • trigger (reset of hold functions)		I/O 1-3 pins freely programmable via software as in- or output: • external emissivity adjustment • ambient temperature compensation • uncommitted value • trigger (reset of hold functions) • alarm output	
Direct output/input	same mV / mA / thermocouple range			
Compatible Software & Configuration	Compact Connect | IRmobile		CompactPlus Connect | IRmobile **(latest Version)**	

Comparison of device specifications

	CT LT Series	CTi LT Series
Optics		
LT02	SF: 200 mm at 400mm SF + CF: 2.5 mm at 23 mm	
LT15	SF: 26.7 at 400mm SF + CF: 0.8 mm at 10 mm CF: 3.4 mm at 50 mm	
LT22	SF: 50 at 1100mm SF + CF: 0.6 mm at 10 mm CF: 2.3 mm at 50 mm	
Price		
Price -> SF optic / 1m cable	Excl. USB-kit	Incl. USB Interface
LT02	200 €	250 €
LT15	250 €	310 €
LT22	265 €	325 €



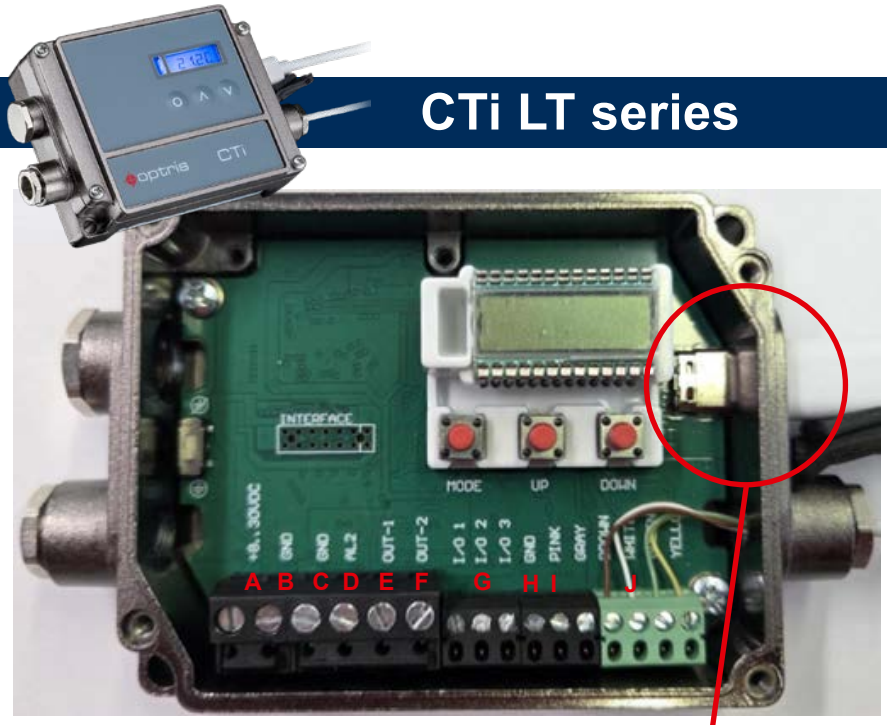


Comparison of Electronic Box

CT LT series

Pin Description	Function
A) +8…36 VDC	Power supply
B) GND	Ground (0 V) of power supply
C) GND	Ground (0 V) of internal in and outputs
D) OUT-AMB	Analog output head temperature (mV)
E) OUT-TC	Analog output thermocouple (J or K)
F) OUT-mV/mA	Analog output object temperature (mV or mA)
G) F1-F3	Functional inputs
H) AL2	Alarm 2 (Open collector output)
I) 3V SW	3 VDC, switchable, for laser-sighting tool
J) GND	Ground (0 V) for laser-sighting tool
K) BROWN - YELLOW	Sensing head cable

CTi LT series



Pin Description	Function
A) +8…36 VDC	Power supply
B) GND	Ground (0 V) of power supply
C) GND	Ground (0 V) of internal in and outputs
D) AL2	Alarm 2 (Open collector output)
E) OUT-1	Analog output mA, mV, TCK
F) OUT-2	Analog output mA, mV, TCK
G) I/O1-I/O3	In- and outputs
H) GND	Ground (0 V)
I) PINK	3 VDC, switchable, for laser-sighting tool
J) GRAY - YELLOW	Sensing head cable

Integrated USB-C: Only for CTi Series!

Comparison of Channels/Pins/Input

Analog Outputs

CT LT Series			CTi LT Series		
two analog output channels – output 1: OUT-mV/mA or OUT-TC, output 2: OUT-AMB			two analog outputs – OUT-1 and OUT-2 freely selectable		
Output signal	**Range**	**Connection pin**	**Output signal**	**Range**	**Connection pin**
Voltage	0 ... (5) 10 V	OUT-mV/mA	**Voltage**	0 ... (5)10 V	OUT-1 or OUT-2
Current	4 ... 20 mA	OUT-mV/mA	**Current**	0 (4) ... 20 mA	OUT-1 or OUT-2
Thermocouple	TC J/K	OUT-TC	**Thermocouple**	TC K	OUT-1 or OUT-2
Sensing head temperature	0 ... (5) 10 V	OUT-AMB	**Alarm Voltage/ Current**	On/Off scalable	OUT-1 or OUT-2

Functional Inputs (CT Series)

The three functional inputs F1 – F3 can be programmed with the software only.	
F1 (digital):	trigger (a 0 V level on F1 resets the hold functions)
F2 (analog):	external emissivity adjustment [0–10 V: 0 V ► ε = 0,1; 9 V ► ε = 1; 10 V ► ε = 1,1]
F3 (analog):	external compensation of ambient temperature/ the range is scalable via software [0–10 V ► -40–900 °C / preset range: -20–200 °C]
F1-F3 (digital):	emissivity (digital choice via table)

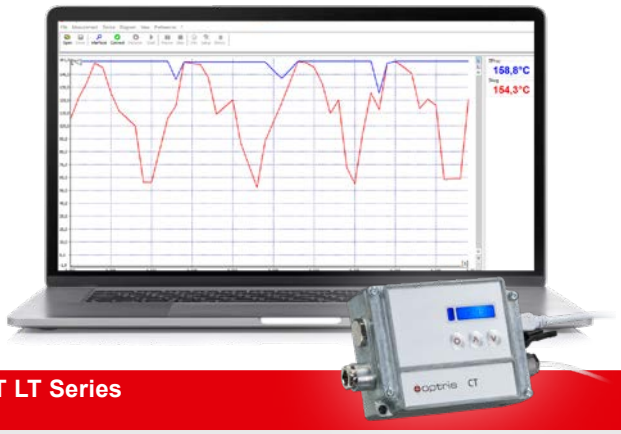
I/O pins (CTi Series)

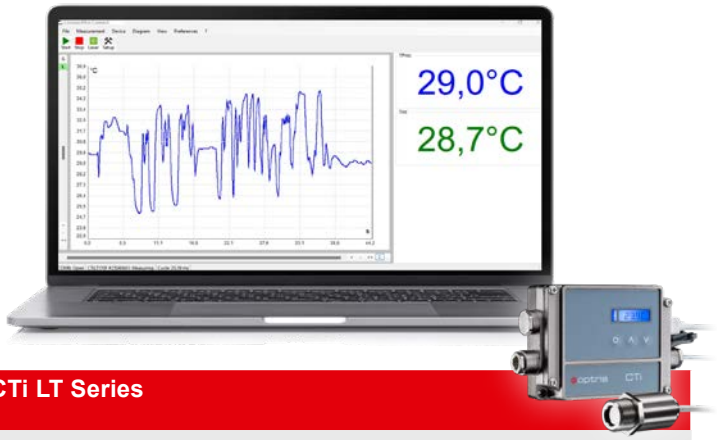
The CTi has three digital pins which can be programmed as outputs (digital) or as inputs (digital or analog) using the **CompactPlus Connect** software. The following functions are available:

Function	I/O pin acts as	Description
Alarm	*Output digital*	Open collector output/ definition as High- or Low alarm via norm. open/ norm. close options in software dialog.
Valid Low	*Input digital*	The output follows the object temperature as long as there is a Low level at the I/O pin. After discontinuation of the Low level the last value will be held.
Valid High	*Input digital*	The output follows the object temperature as long as there is a High level at the I/O pin. After discontinuation of the High level the last value will be held.
Hold Low-High	*Input digital*	The last value will be held if there is a signal with a rising edge on the I/O pin.
Hold High-Low	*Input digital*	The last value will be held if there is a signal with a falling edge on the I/O pin
Hold Reset Low	*Input digital*	Reset of Peak or valley hold (High-Low signal)
Hold Reset High	*Input digital*	Reset of Peak or valley hold (Low-High signal)
Emissivity external	*Input analog*	The emissivity value can be adjusted via a 0-10 V signal on the I/O pin (scaling possible via software).
Uncommitted value	*Input analog*	Display of an uncommitted value
Laser on Low	*Input digital*	Turning on the laser (Low signal)
Laser on High	*Input digital*	Turning on the laser (High signal)
External Ambient Compensation	*Input analog*	The ambient temperature will be determined by a voltage on the I/O-pin [0–10 V; range scalable].
External Transmitted Radiation	*Input analog*	The transmitted ambient temperature will be determined by a voltage on the I/O-pin [0–10 V; range scalable].

Comparison of Software

Software





CT LT Series	CTi LT Series
Compact Connect	**CompactPlus Connect**
https://optris.com/software/compact-connect/	https://optris.com/software/compactplus-connect/
Minimum system requirements:	**Minimum system requirements:**
• Windows 7, 8, 10	• Windows 8, 10, 11
• USB interface	• USB interface
• Hard disc with at least 30 MByte free space	• Hard disc with at least 60 MByte free space
• Min. least 128 MByte RAM	• min. 128 MByte RAM
Baud rate: 9.6...115.2 kBaud	**Baud rate:** 115.2 or 921.6 kBaud
Data bits: 8	**Data bits:** 8
Parity: none	**Parity:** none
Stop bits: 1	**Stop bits:** 1
Flow control: off	**Flow control:** off
All sensors of the CT series are using a binary protocol. Alternatively, they can be switched to an ASCII protocol. To get a fast communication the protocol has no additional overhead with CR, LR or ACK bytes.	All sensors of the CTi series use a binary protocol. To get a fast communication the protocol has no additional overhead with CR, LR or ACK bytes

Both series are compatible with the Optris IR mobile app.
The CT series requires separate USB interface kit for connection.

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when temperature matters

Optris GmbH & Co. KG
Ferdinand-Buisson-Str. 14
13127 Berlin · Germany

Phone: +49 30 500 197-0
E-mail: info@optris.com
www.optris.com

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