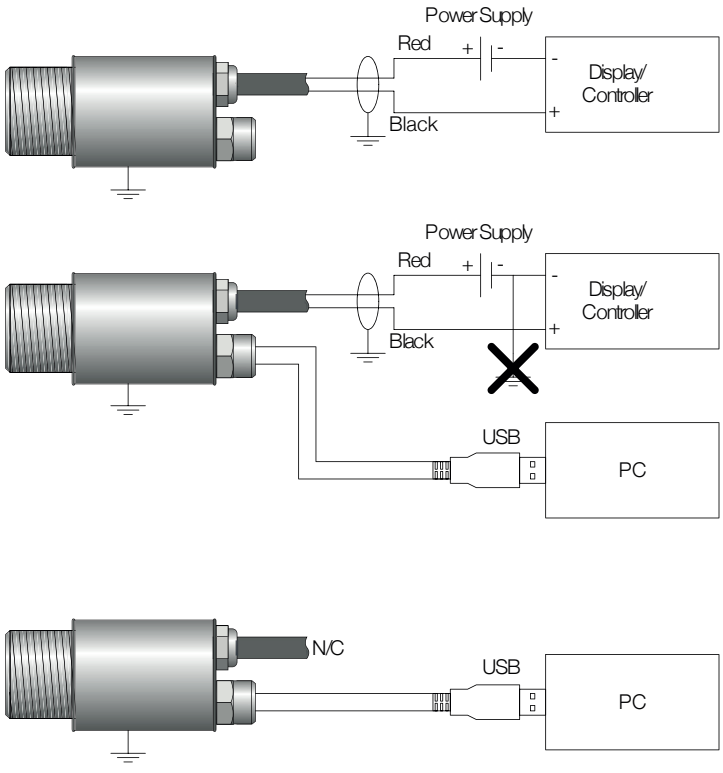
i-Tec USB

USB Configurable Infrared Temperature Sensors with 4-20 mA Output

- Temperature ranges from -40°C to 2000°C
- 2-wire 4-20 mA output
- Fully configurable via USB using Modbus protocol. Cable and software included
- Specialised models for measuring metals, high-temperature objects or glass surfaces
- General-purpose models for most other applications
- Peak and valley hold mode allows easy measurement of objects on conveyors
- Stainless steel housing, sealed to IP65
- Quick and easy installation

CONNECTIONS

The sensor will operate with either the 4 to 20 mA cable connected, the USB cable connected, or both.



Note: The sensor must be grounded at only one point, either the cable shield or the sensor housing.

The i-Tec USB Series measures temperatures from -40° C to 2000°C accurately and consistently, with an outstanding response time of 200 ms. The 4 to 20 mA output is compatible with almost any indicator, controller, recorder or data logger. without the need for special interfacing or signal conditioning.

A choice of measurement wavelengths is available to suit a range of applications.

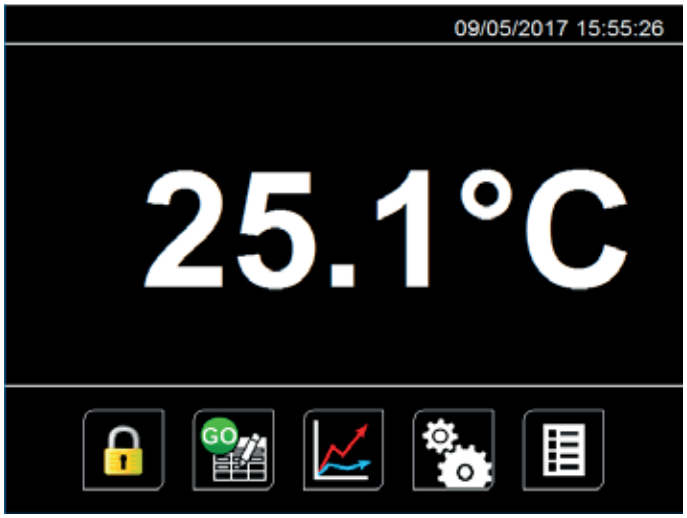
General-purpose USB8 (8-14 µm) models can measure from -40°C to 1000°C. They are suitable for measuring high-emissivity materials such as paper, thick plastics, food, pharmaceuticals, rubber, asphalt and painted surfaces. These models are capable of measuring very low temperatures, so they are ideal for sub-zero measurements in the food, logistics and storage industries.

Short-wavelength USB2 (2.2 µm) models have a choice of temperature ranges from 45°C to 2000°C. They provide a more accurate reading when measuring low-emissivity materials such as many re ective metals. They are also capable of measuring through glass viewports.

Glass USB5 (5 µm) models can measure from 50°C to 1650°C. They are filtered at a wavelength where glass is least reflective, making them an ideal pyrometer for glass surface temperature measurement.

All models have USB communications. A USB cable and Windows software is included. All data is transmitted via Modbus, so it is also easy to configure and read temperatures from the sensor using third-party software.

The USB cable has an IP65 connector at the sensor end. An IP65 cap protects the sensor when the USB cable is not connected.



SOFTWARE

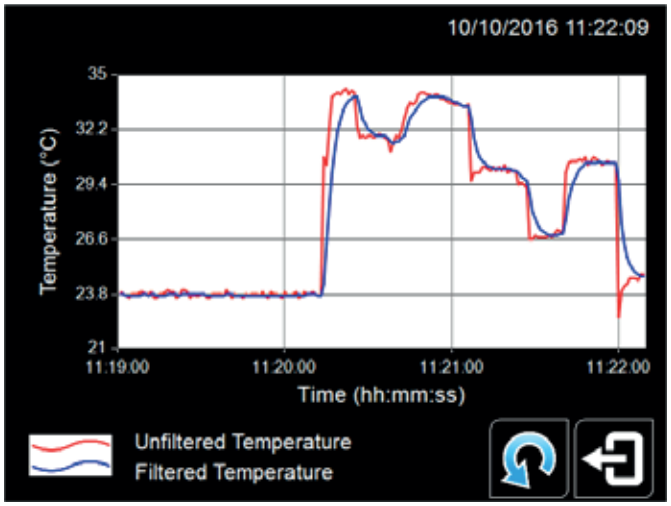
i-Tec Config is simple, touch-friendly software, compatible with versions of Windows from Vista onwards. i-Tec Config is supplied with each sensor.

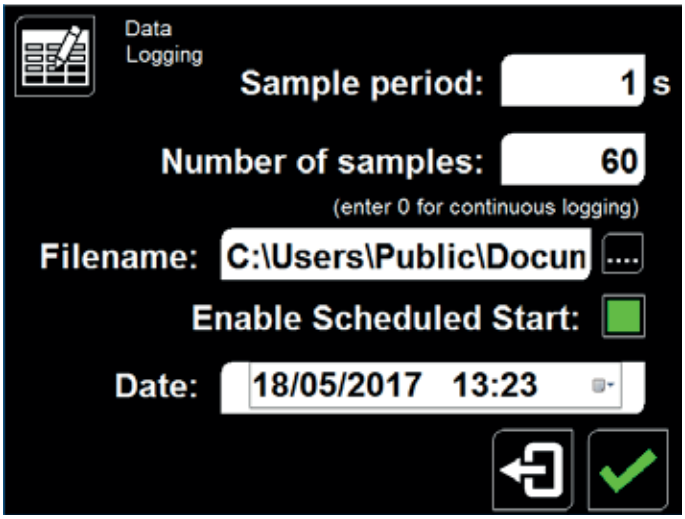
Alternatively, the sensor's Modbus protocol allows it to be used with other Modbus software.

FEATURES

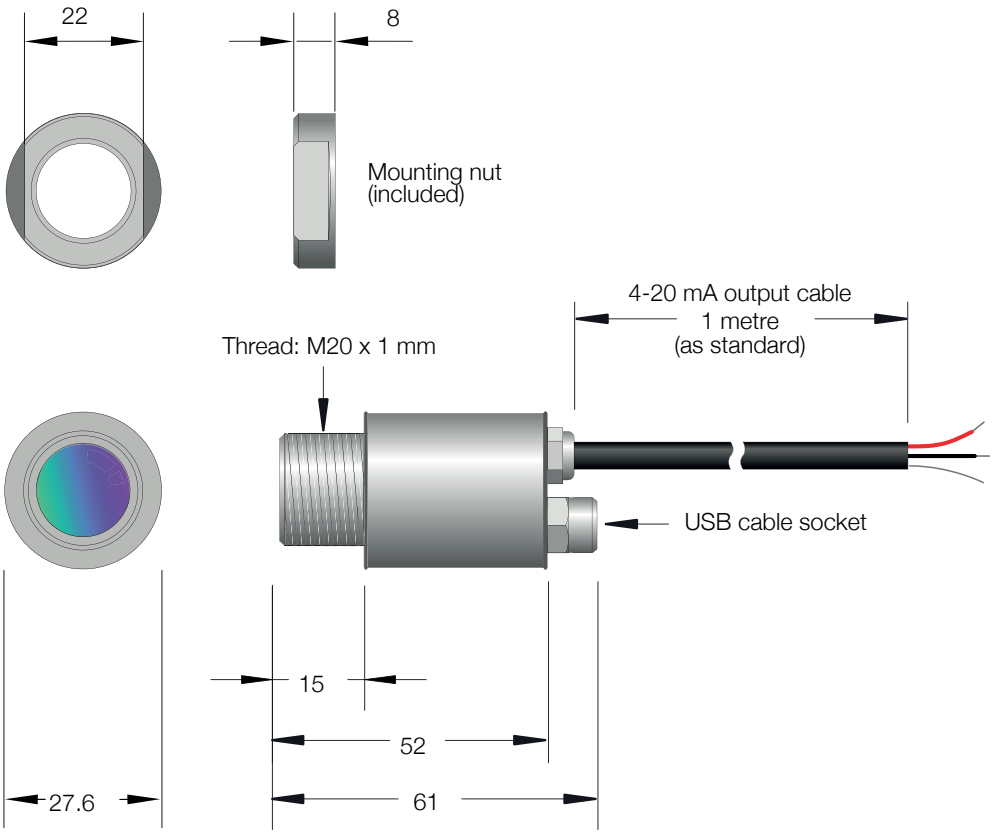
Temperature display
Scrolling temperature chart
Data logging to comma-separated text file, compatible with Excel
Sensor configuration:

- Emissivity setting
- Averaging
- Peak/valley hold processing
- Reflected energy compensation
- 4-20 mA output temperature scale



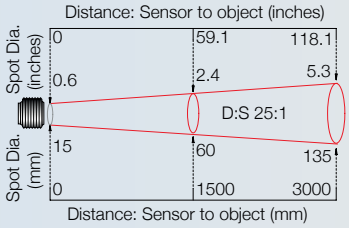


DIMENSIONS



OPTICS Diameter of target spot measured versus distance from sensing head (90% energy)

Optics (USB2 and USB5)



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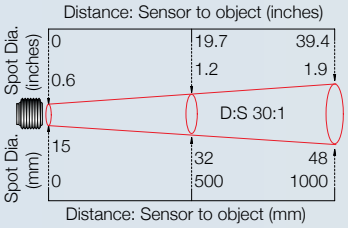
Optics (USB8)



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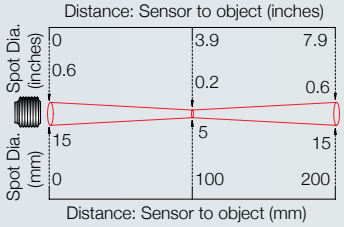
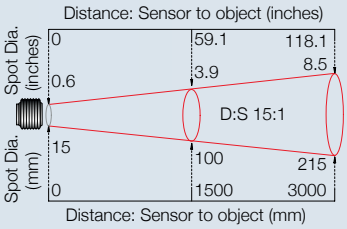
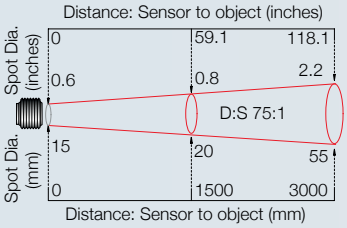


CF

Optics (USB2)



115



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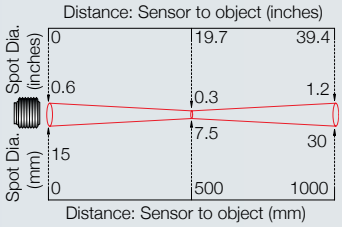


CF

GENERAL SPECIFICATIONS

Model	USB2	USB5	USB8
Spectral Response	2.2 µm	5 µm	8 to 14 µm
Application	Ferrous metals and high-temperature targets	Glass	General purpose
Temperature range	Choice of ranges from 45°C to 2000°C	Choice of ranges from 50°C to 1650°C	-40°C to 1000°C
Response time	200 ms		
Output	2-wire, 4-20 mA, linear with measured temperature		
Communications	USB 2.0 (removable USB cable and software included) using the Modbus protocol		
Optics	Choice of divergent or focused optics for small or large targets at short or long distances (see Optics)		
Accuracy	± 2°C or 1% of reading, whichever is greater	± 1°C or 1% of reading, whichever is greater	
Repeatability	± 0.5°C or 0.5% of reading, whichever is greater		
Emissivity Setting	0.1 to 1.0		
Minimum Span (4-20 mA output)	Full temperature range		
Minimum Span (4-20 mA output)	100°C		

ELECTRICAL

Supply Voltage	24 V DC (28 V DC max)
Sensor Voltage (minimum)	6 V DC
Maximum Loop Impedance	900 Ω @ 24 V DC

MECHANICAL

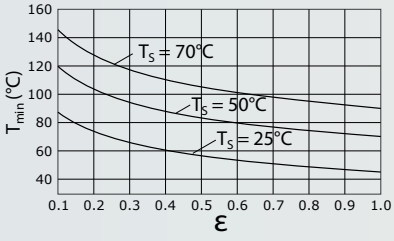
Construction	Stainless Steel
Dimensions	Ø 27.6 x length 61 mm including cable glands
Thread mounting	M20 x 1 mm pitch, length 15 mm
4-20 mA Output Cable Length	1 m (standard), up to 30 m (optional)
Weight with 1 m Output Cable	155 g
USB Cable Length	1.8 m

ENVIRONMENTAL

Environmental Rating	IP65
Ambient (Operating) Temperature	0°C to 70°C (cooled models are available for higher temperatures)
Relative Humidity	95% max. non-condensing

MINIMUM MEASURABLE TEMPERATURE

(USB2-115-LT ONLY)



Graph showing the minimum measurable object temperature (T_{min}), determined by surface emissivity (ε) and sensor temperature (T_S).

MODEL NUMBERS

Short Wavelength	**USB2**	**115**	**MT**	**WJ**
Glass	**USB5**	**125**	**GHT**	**WJ**
General Purpose	**USB8**	**130**		**WJ**

Cooling

- **(blank)** Sensor without cooling
- **WJ** Air/water cooled jacket with air purge collar

Temperature range

USB2

- **LT** 45°C to 300°C (115 models only)
- **PT** 100°C to 400°C (115 models only)
- **MT** 250°C to 1000°C
- **HT** 450°C to 2000°C

USB5

- **GLT** 50°C to 1650°C
- **GHT** 200°C to 1650°C

USB8

- **(blank)** All models: -40°C to 1000°C

Field of view

USB2

- **115** 15:1 divergent optics (LT & PT models only)
- **125** 25:1 divergent optics
- **175** 75:1 divergent optics
- **CF** Close-focus optics (focal spot size 7.5 mm at 500mm distance)

USB5

- **125** 25:1 divergent optics

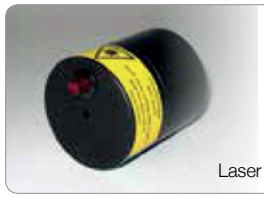
USB8

- **130** 30:1 divergent optics
- **CF** Close-focus optics (focal spot size 5 mm at 100mm distance)

Spectral response

- **USB2** 2.2 µm, for measuring reflective metals and high-temperature objects
- **USB5** 5 µm, for measuring glass surface temperature
- **USB8** 8 to 14 µm, general-purpose, for most other applications

ACCESSORIES



Laser Sighting Tool **LSTL**

Adjustable mounting bracket **ABL**

Air/water cooled housing **WJ**

Air purge **APL**

Dual laser sighting bracket **DLSBFL/ DLSBAL**

Protective Window **PWL**

ACCESSORIES ALSO AVAILABLE

Fixed mounting bracket **FBL**

Extended analogue output cable (30 m max):

- for i-Tec USB models without cooling **PUACE**
- for i-Tec USB WJ models **KVLn**

3-point calibration certificate **CALCERT**