Fixed IR Temperature Transmitter with 4-20 mA and MODBUS over USB outputs

OS-TX-USB-Series infrared pyrometers measure 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. Offers easy connection without the need for special interfacing or signal conditioning.

General-purpose (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 (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 reflective metals. They are also capable of measuring through glass viewports. All models have USB communications. A USB cable is included and free software is available to download from the Omega website.
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, and an IP65 cap protects the sensor when the USB cable is not connected.
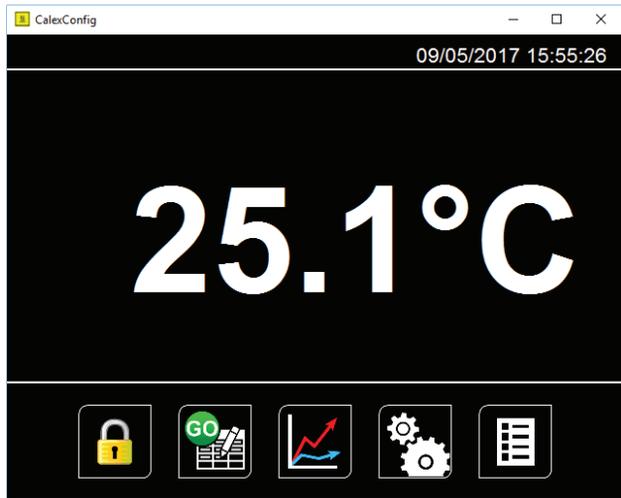
Software

The sensor can be configured using the included USB cable and a choice of Windows software. It is also possible to take temperature readings, see temperature charts and log data via USB in real time.
OmegaConfig is available to download free of charge at www.omega.com.

Features

- **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**
- **Specialized models for measuring metals, or high temperature objects**
- **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 (NEMA 4)**
- **Quick and easy installation**
- **OMEGAonline Software**

OmegaConfig

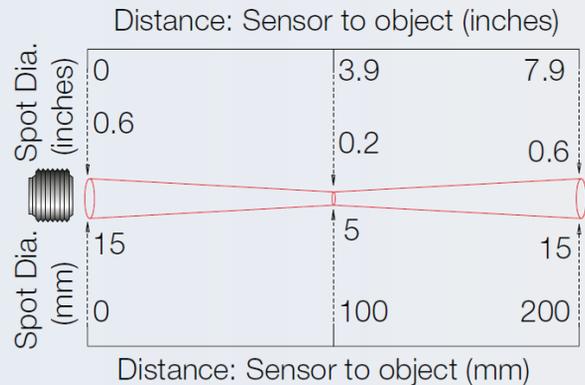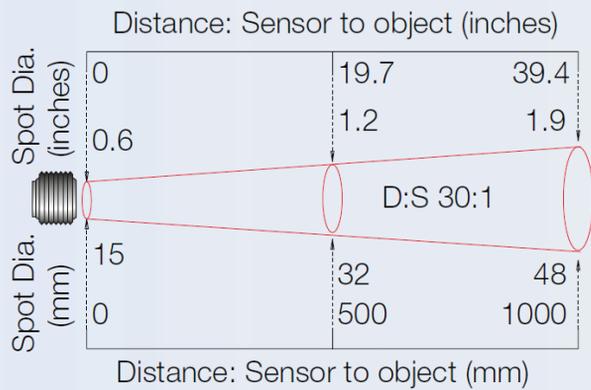Simple, touch-friendly software for one sensor.

Features (OmegaConfig)

- **Temperature display (°C or °F)**
- **Scrolling temperature chart**
- **Data logging to comma-separated text file, Excel-compatible**
- **OS-TX-USB-Series sensor configuration:**
    - **Emissivity setting**
    - **Averaging**
    - **Peak/valley hold processing**
    - **Reflected energy compensation**
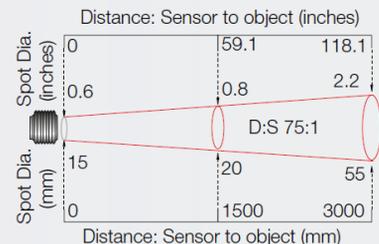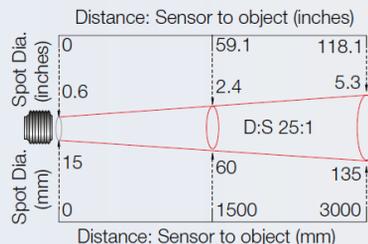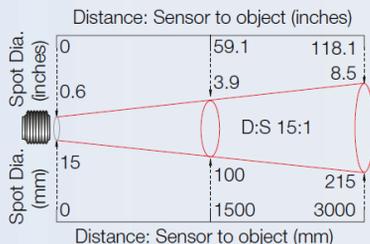   - **4-20 mA output temperature scale**

Third-Party Software

The OS-TX-USB-Series can also be used with third-party Modbus software.
Modbus protocol information is provided in the Operator's Guide, available to download at www.omega.com and supplied with each sensor.

Optics

301

801

Optics

151

251

751

General Specifications

Model	*-2USB	*-USB
Spectral Response	2.2 µm	5 µm
Application	Ferrous metals and high-temperature targets	General Purpose
Temperature Range	Choice of ranges from 45°C to 2000 °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 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	0.1 to 1.0	
Maximum Span (420mA output)	Full temperature range	
Minimum Span (420 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
USBCable Length	1.8 m
Relative Humidity	95% max. non-condensing

MINIMUM MEASURABLE TEMPERATURE

(OS151A-2USB-LT only)
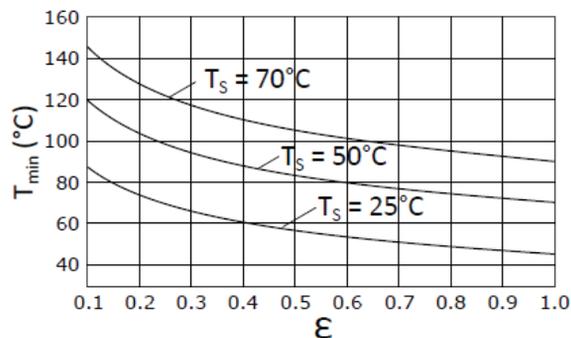
Graph showing the minimum measurable object temperature (Tmin), determined by surface emissivity (ε) and sensor temperature (TS).

Environmental

Environmental Rating	IP65
Ambient (Operating) Temperature	0°C to 70°C (cooled models are available for higher temperatures)

Laser sighting tool

OSUSB-LST

Adjustable mounting bracket

OSUSB-ABL

Air/water cooled housing

add -WC to end of part number

Air purge collar

OSUSB-APL

Additional Options:

- **Fixed mounting bracket (OSUSB – FBL)**
- **Extended 4-20 mA output cable**
  - **Models without cooling add -CE***
    - *** = cable length in meters**
  - **Models with cooling (-WC) add**
    - *** = cable length in meters**
  - **Maximum length is 30 m**

Ordering Example:

OS801A-USB-WC-CEHT5
Close Focus (5mm spot at 100 mm)
Infrared temperature sensor with water cooled jacket and 5m (16 ft) cable.

Model Numbers

OS150A-2USB Series OS [151A] - 2USB - [LT] - [WC]
Short Wavelength

OS301A-USB Series OS [301A] - USB - [WC]
General Purpose

Cooling

(blank)	Sensor without cooling
WC	Air/water cooled jacket with air purge collar

Temperature range

OS150A-2USB Series

LT	45°C to 300°C (151 models only)
MT	250°C to 1000°C
HT	450°C to 2000°C

OS301A-USB Series

(blank)	All models: -40°C to 1000°C

Spectral response

OS150A-2USB Series

2USB	2.2 μm, for measuring reflective metals and high-temperature objects

OS301A-USB Series

USB	8 to 14 μm, general-purpose, for most other applications

Optics

OS150A-2USB Series

151A	15:1 divergent optics (LT models only)
251A	25:1 divergent optics
751A	75:1 divergent optics
801A	Close-focus optics (focal spot size 7.5 mm at 500mm distance)

OS301A-2USB Series

301A	30:1 divergent optics
801A	Close-focus optics (focal spot size 5 mm at 100mm distance)