

# Miniature Fixed Infrared Temperature Sensor with Touch Screen Display.

OS-MINI Series  
OS-MINI Model



Optional

## Models with Display Only

- ✓ 4 to 20 mA or RS485 MODBUS® Outputs
- ✓ Screen Color Change Indicates Alarm Mode
- ✓ Data Logging to MicroSD Card on Touch Screen Models
- ✓ Alarm Relay, Outputs Rated 24 Vdc— No Need for Separate Trip Amplifier
- ✓ Maximum, Minimum, Average and Instantaneous Readings, Peak or Valley Hold, Reflected Energy Compensation

## Standard Features for Models with or without Display

- ✓ High-Ambient Sensing Head Withstands Up to 180°C (356°F) Without Cooling Setting— Suitable for a
- ✓ Adjustable Emissivity Materials Such as Paper, Plastics, Food, Painted Surfaces and Many More
- ✓ Temperature Ranges from -20 to 1000°C (-4 to 1832°F)
- ✓ Resistant to Interference from Movement of Sensing Head Cable— Ideal for Mounting on Robot Arms
- ✓ Sensing Head Sealed to IP65



OS-MINI302-D-MA shown smaller than actual size.

Optional touch screen for temperature indication and configuration.



Comes with miniature sensing head.

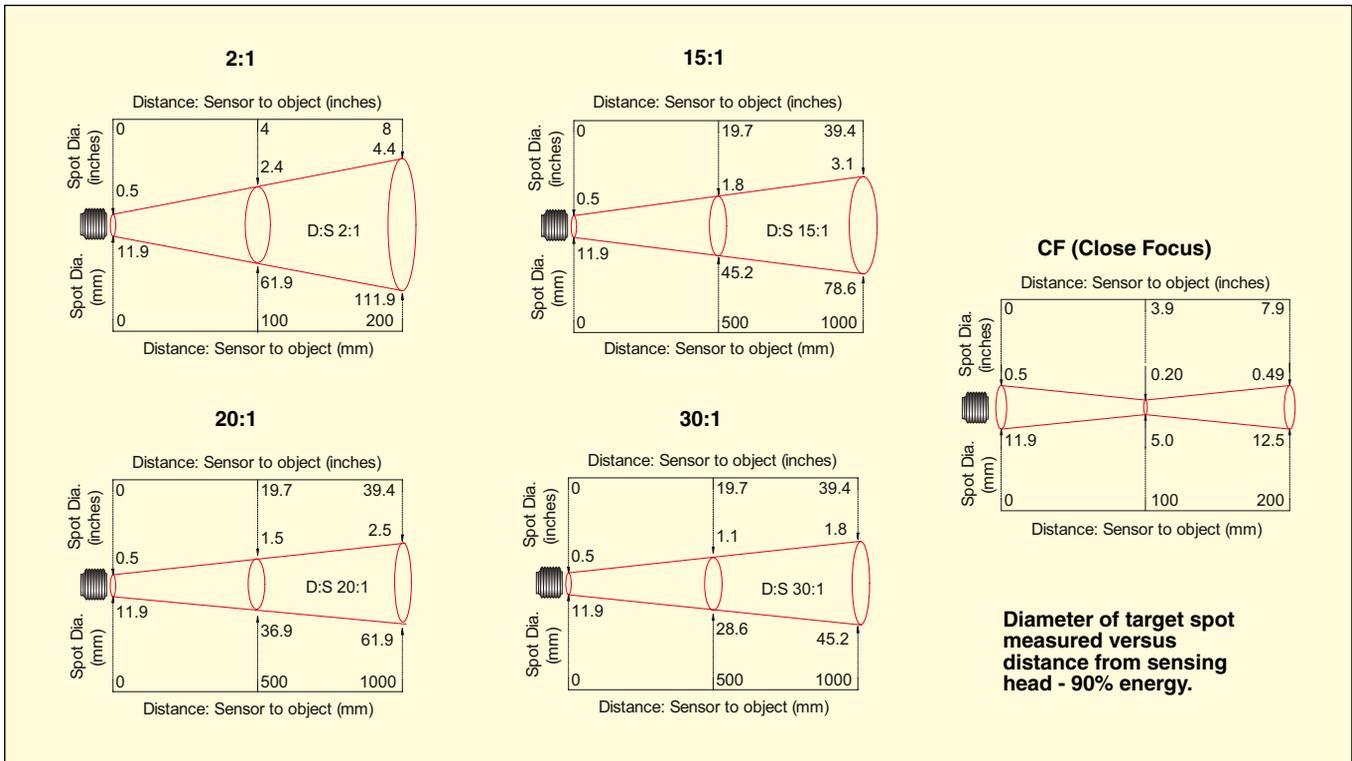
The new OMEGA® mini infrared pyrometer is packed full of exciting new features. Its miniature sensing head measures just 18 x 45 mm (0.71 x 1.8"), making it ideal for mounting in tight spaces. A high ambient version is capable of withstanding temperatures of up to 180°C (356°F) without water or air-cooling, allowing significant energy and cost savings to be made. Manufactured from 316 stainless steel and sealed to IP65, the OMEGA mini sensing head is ideal for food and pharmaceutical applications among many others.

A wide selection of optics allows the OMEGA mini to focus on small or large targets at short or long distances.

The special low-noise interconnecting cable is resistant to interference from movement, making the sensing head ideal for mounting on robot arms. It can be supplied in lengths from 1 to 30 m (3.3 x 98').

The electronics module is also available with a number of different options: The backlit touch screen interface provides a large, bright display of the measured temperature in digital format and a graph view that shows the history of the measured temperature. It also enables full configuration of

## Field of View



## Specifications

### Maximum Temperature Span (Touch Screen Models):

1020°C (1868°F)

### Minimum Temperature Span (Touch Screen Models):

100°C (212°F)

**Output:** 4 to 20 mA or RS485  
MODBUS

**Accuracy:** ± 1°C or 1%, whichever is greater

**Repeatability:** ± 0.5°C or 0.5%, whichever is greater

**Emissivity Setting Range:**  
0.20 to 1.00

### Emissivity Setting Method:

**MA Models:** Via two rotary switches in electronics box

**MODBUS Display Models:**  
Via RS485; via touch screen

**Response Time, t90:** 240 ms (90% response)

**Spectral Range:** 8 to 14 μm

**Supply Voltage:** 24 Vdc ± 5%

**Maximum Current Draw:** 100 mA

### Maximum Loop Impedance (MA and MA-R-D Models):

900 Ω (4 to 20 mA output)

### Alarm Relays (MA-R-D and CR-R-D Models):

2 x single pole changeover alarm relays rated 24 Vdc, 1 A, isolated 500 Vdc

### Cable Length (Sensing Head to Electronics Module):

1 m (3.3') (standard), up to 30 m (98.4') (optional)

### Ambient Temperature (Sensing Head):

0 to 60°C (32 to 140°F)

### Weight with 1 m (3.3') Cable:

Approximately 390 g (14 oz)

### Cable Connections:

Removable screw terminal blocks (see connections diagram to right)

### Conductor Size:

28 to 18 AWG

### Output Cable Gland:

Suitable for cable diameters 3.0 to 6.5 mm

### Sensing Head:

316 stainless steel (see diagram on previous page)

### Dimensions:

Ø18 x 45 mm

### Mounting:

M16 x 1 mm thread

### Electronics Module:

Die-cast aluminum

### Dimensions:

98 W x 64 H x 36 mm D

(3.9 x 2.5 x 1.4")

### Mounting:

Two M4 screws for wall mounting (see diagram on previous page)

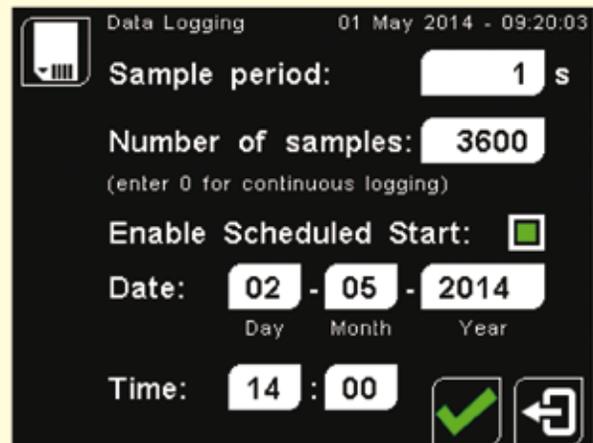
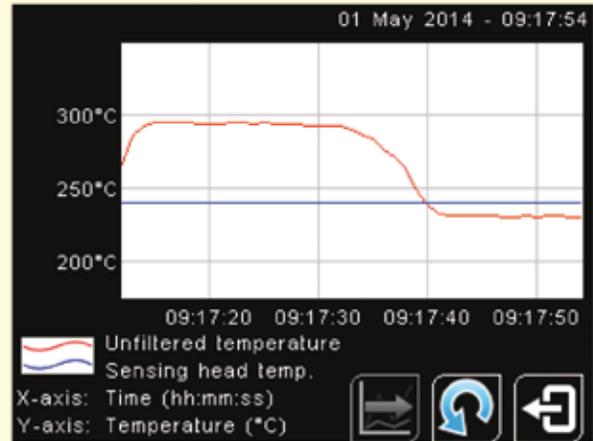
the sensor including temperature range setting between -20 to 1000°C (-4 to 1832°F), adjustable filtering, peak or valley hold processing, emissivity setting and reflected energy compensation.

In alarm conditions, the whole display changes color to provide an immediate and obvious alarm indication. alarm modes and levels can be configured via the touch screen. When fitted with a micro sd card, the Omega mini also functions as a data logger, providing a useful means of recording process temperatures for quality assurance and traceability.

The user can select the sample rate and the number of samples to be taken and schedule the data logging to start at a certain time. With a 2 gb card, the user can store 28.4 million time and date stamped readings, which provides almost 1 years worth of data at the fastest possible sample rate of 1 per second. Output options include 4 to 20 mA, RS485 Modbus and alarm relays, which are rated 24 Vdc so there is no need for a separate trip amplifier. Other options include mounting brackets, an air purge collar, protective lens cover and laser sighting tool.

The touch screen option can also be used as a data logger. They include a MicroSD card slot for data logging which can be configured using the touch screen. The user can select the sample rate, the number of samples to be taken and schedule the start time. Using the optional 2 GB card, the unit can store 28.4 million readings (which is approximately a 1-year's worth of data at the highest

sampling rate of 1 reading per second). Alarm events can also be logged. Readings are time and date stamped using the sensor internal clock. Data is stored in .csv format which is easily viewed and stored by spreadsheet programs. The clock resets when power is disconnected or will continue if the optional battery is installed.



## ENVIRONMENTAL

**Environmental Sealing:**  
NEMA 4 (IP65)

**Ambient Range:** 0 to 70°C  
(32 to 158°F)

**Relative Humidity:** 95% non-condensing

### Electronics Module:

**Environmental Sealing:** NEMA 4 (IP65) models with touch screen

**Ambient Range:** 0 to 60°C  
(32 to 140°F)

**Relative Humidity:**  
95% non-condensing

### Electromagnetic Standards:

**EMC Directive:** EN61326-1:2006

**Immunity:** IEC 61000-4-2,  
IEC 61000-4-3, IEC 61000-4-4,  
IEC 61000-4-5, IEC 61000-4-6,  
EN 55022A, EN 55022B

**Data Logging (Models with Display Data Logging Interval):**  
1 to 86,400 sec (1-day)

**MicroSD Card:** 2 GB max capacity (not included)

**Internal Clock Battery:** 1 x BR1225 3V (not included)

**Variables Logged:** Target temp, Sensing head temp, electronics module temp, max, min, average, emissivity setting, reflected energy compensation, alarm events

**File Format:** .csv

**Configurable Parameters:** Sample period, number of samples, scheduled start date and time

## TOUCH SCREEN DISPLAY

**Display Format:** 72 mm (2.83") resistive touch TFT, 320 x 240 pixels, backlit

### Configurable Parameters:

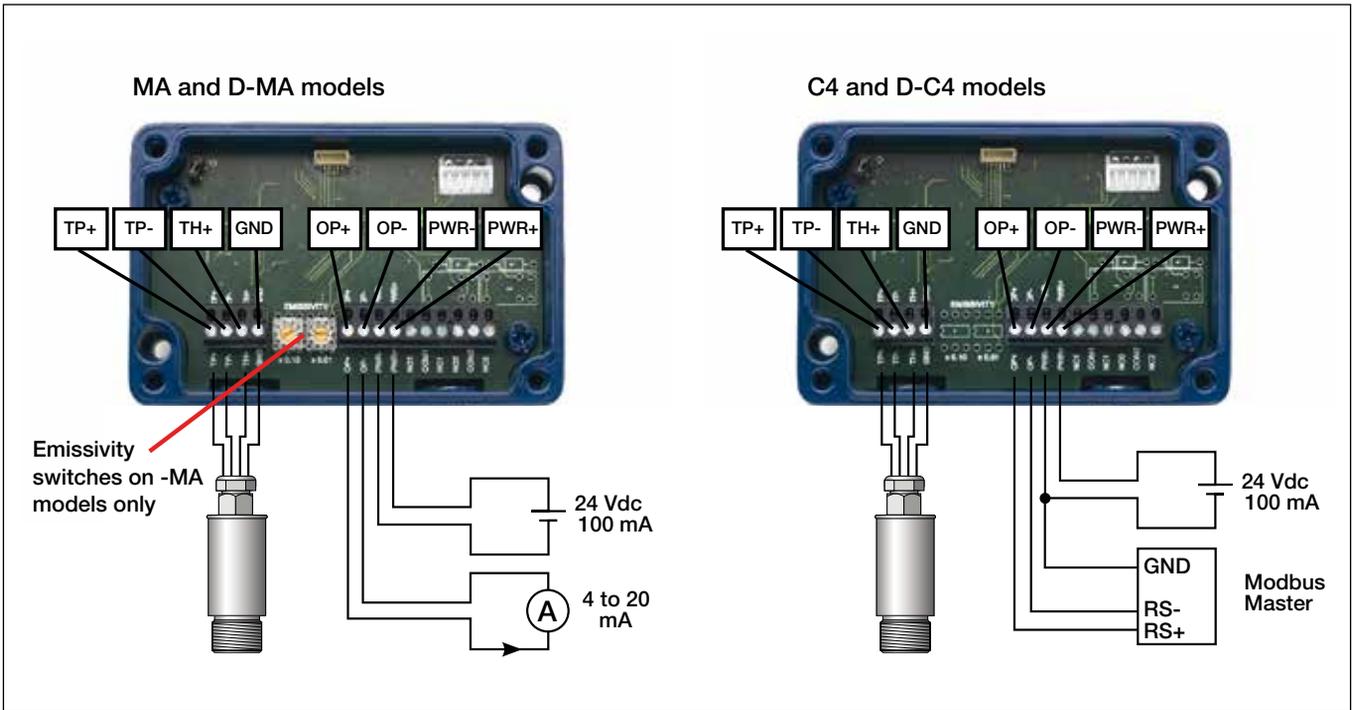
Temperature range, temperature units, emissivity setting, reflected energy compensation, alarms, signal processing, Modbus address (D-C4 models), date, time, data logging

**Temperature Units:** °C, °F

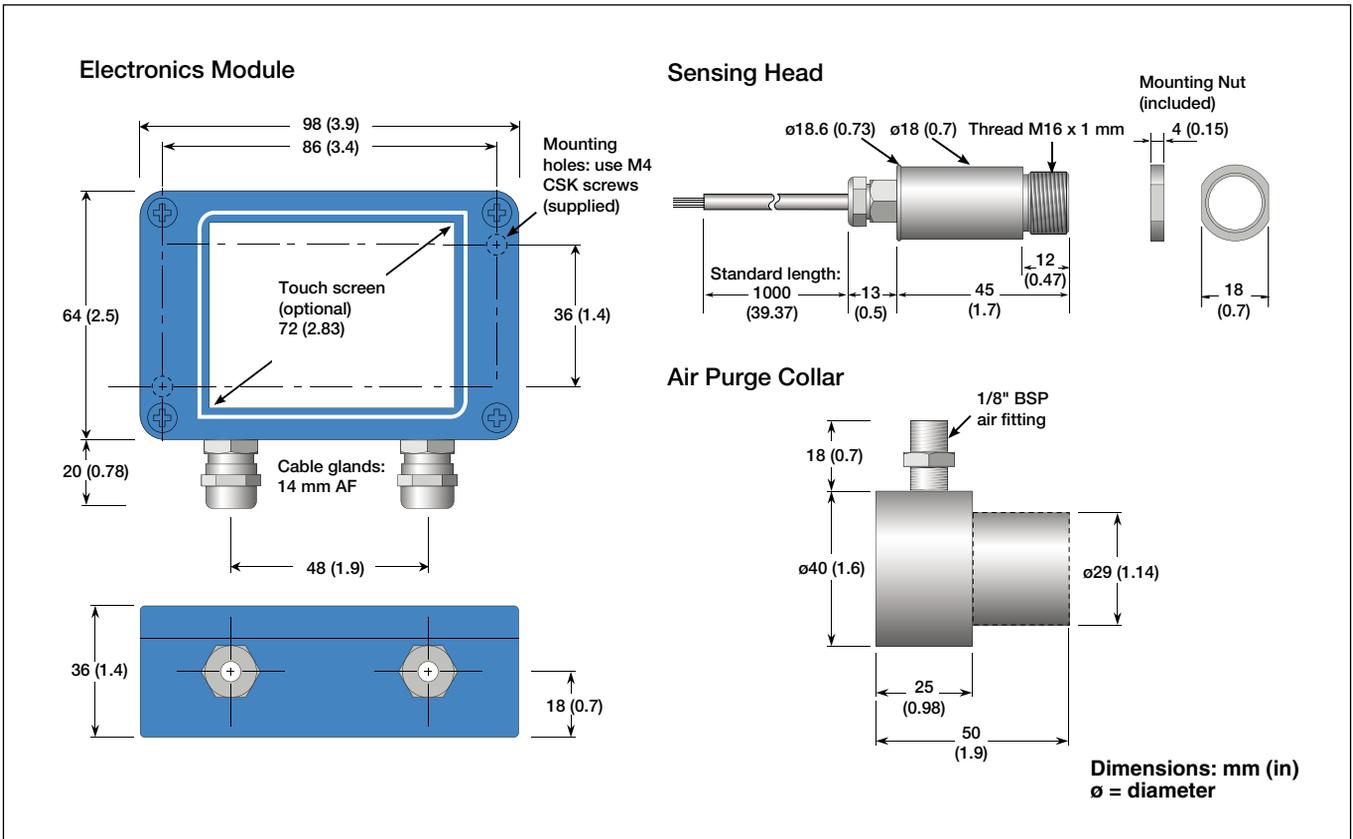
**Temperature Resolution:** 0.1°

**Alarm Configuration:** Two alarms with adjustable levels, individually configurable as HI or LO; Alarm 2 can be set to target temperature or sensing head internal temperature

**Signal Processing:** Average, peak hold, valley hold, minimum, maximum



**For OS-MINI and OS-MINI22 Models**



**Dimensions for all models OS-MINI, OS-MINI22 and OS-MINIUSB**

OS-MINI[ * ]-[**]-[***]	Model No.	Description
<b>Field of View [ * ]</b>	<b>212</b>	2:1 optics [all ranges, 0 to 60°C (32 to 140°F) head]
	<b>152</b>	15:1 optics [all ranges, 0 to 60°C (32 to 140°F) head]
	<b>302</b>	30:1 optics [all ranges, 0 to 60°C (32 to 140°F) head]
	<b>802</b>	Close focus optics (0.20" @ 3.9") [all ranges, 0 to 60°C (32 to 140°F) head]
	<b>HA201</b>	High ambient head [0 to 180°C (32 to 356°F)] with 20:1 optics, available with HT or XT ranges only
<b>Output [**]</b>	<b>MA</b>	4 to 20 mA (no display)
	<b>D-MA</b>	4 to 20 mA, touch screen display, 2 alarm relays
	<b>C4</b>	RS485 MODBUS output (no display)
	<b>D-C4</b>	RS485 MODBUS output, touch screen display, 2 alarm relays
<b>Temperature Range [***]</b>	<b>LT</b>	-20 to 100°C (-4 to 212°F)
	<b>MT</b>	0 to 250°C (32 to 482°F)
	<b>HT</b>	0 to 500°C (32 to 932°F)
	<b>XT</b>	0 to 1000°C (32 to 1832°F)

### Models with Touch Screen Display

Models with touch screen display, 2 GB microSD card, adaptor, standard relay output and configurable temperature range -20 to 1000°C (-4 to 1832°F)	
Model No.	Description
<b>OS-MINI212-D-MA</b>	2:1 optics and 4 to 20 mA output, two single pole changeover alarm relay outputs rated 24 Vdc, 1 A, fully configurable, with touch screen interface
<b>OS-MINI152-D-MA</b>	15:1 optics and 4 to 20 mA output, two single pole changeover alarm relay outputs rated 24 Vdc, 1 A, fully configurable, with touch screen interface
<b>OS-MINI302-D-MA</b>	30:1 optics and 4 to 20 mA output, two single pole changeover alarm relay outputs rated 24 Vdc, 1 A, fully configurable, with touch screen interface
<b>OS-MINI802-D-MA</b>	Close focus (CF) optics (measured spot diameter 5 mm at distance 100 mm) and 4 to 20 mA output, two single pole changeover alarm relay outputs rated 24 Vdc, 1 A, fully configurable, with touch screen interface
<b>OS-MINI-HA201-D-MA</b>	High ambient sensing head, ambient temperature range 0 to 180°C (32 to 356°F), 20:1 optics and 4 to 20 mA output, two single pole changeover alarm relay outputs rated 24 Vdc, 1 A, fully configurable, with touch screen interface

### Models with RS485/MODBUS Output

Models with touch screen display, 2 GB microSD card, adaptor, standard relay output and configurable temperature range -20 to 1000°C (-4 to 1832°F)	
Model No.	Description
<b>OS-MINI212-D-C4</b>	2:1 optics and RS485 MODBUS output, two single pole changeover alarm relay outputs rated 24 Vdc, 1 A, fully configurable, with touch screen interface
<b>OS-MINI152-D-C4</b>	15:1 optics and RS485 MODBUS output, two single pole changeover alarm relay outputs rated 24 Vdc, 1 A, fully configurable, with touch screen interface
<b>OS-MINI302-D-C4</b>	30:1 optics and RS485 MODBUS output, two single pole changeover alarm relay outputs rated 24 Vdc, 1 A, fully configurable, with touch screen interface
<b>OS-MINI802-D-C4</b>	Close focus (CF) optics (measured spot diameter 5 mm at distance 100 mm) and RS485 MODBUS output, two single pole changeover alarm relay outputs rated 24 Vdc, 1 A, fully configurable, with touch screen interface
<b>OS-MINI-HA201-D-C4</b>	High ambient sensing head, ambient temperature range 0 to 180°C (32 to 356°F), 20:1 optics and RS485 MODBUS output, two single pole changeover alarm relay outputs rated 24 Vdc, 1 A, fully configurable, with touch screen interface

\* Specify temperature range from table on next page.

## Models with No Display

Basic models for ambient temperature range 0 to 60°C (32 to 140°F) with current output (without touch screen display, relay and SD card)

Model No.	Description
OS-MINI212-MA-(* )	4 to 20 mA output, adjustable emissivity setting via two rotary switches inside electronics module, without touch screen interface, 2:1 optics
OS-MINI152-MA-(* )	4 to 20 mA output, adjustable emissivity setting via two rotary switches inside electronics module, without touch screen interface, 15:1 optics
OS-MINI302-MA-(* )	4 to 20 mA output, adjustable emissivity setting via two rotary switches inside electronics module, without touch screen interface, 30:1 optics
OS-MINI802-MA-(* )	4 to 20 mA output, adjustable emissivity setting via two rotary switches inside electronics module, without touch screen interface close focus (CF) optics (measured spot diameter 5 mm at distance 100 mm)

\* Specify temperature range from table below.

## K Type High Ambient Sensing Head

Basic models for high ambient temperature sensing head with current output (without touch screen display, relay and SD card)

Model No.	Description
OS-MINI-HA201-MA-HT	Measurement temperature range 0 to 500°C (32 to 932°F), 20:1 optics
OS-MINI-HA201-MA-XT	Measurement temperature range 0 to 1000°C (32 to 1832°F), 20:1 optics

## Measurement Temperature Range

Model No.	Description
-LT	-20 to 100°C (-4 to 212°F)
-MT	0 to 250°C (32 to 482°F)
-HT	0 to 500°C (32 to 932°F)
-XT	0 to 1000°C (32 to 1832°F)



Air purge collar.



Laser sighting tool.

## Options and Accessories

Model No.	Description
MINI-MSD	Spare 2 GB MicroSD card with SD card adaptor, for OMEGA mini touch screen models, for storage and transfer of logged data
OS210-FBS	Fixed bracket for compact sensors
OS210-ABS	Adjustable bracket for compact sensors
OS210-APSW	Air purge collar for OS-MINI212
OS210-APSN	Air purge collar for OS-MINI152, 302, 802, and CF Models
OS210-LSTS	Laser sighting tool for compact sensors
PMCE-(**)	Extended sensing head cable (-MA output)
PMCEHT-(**)	Extended sensing head cable, high temperature (-HT models)

Comes complete with sensing head and 1 m (3.3') cable and operator's manual. Display models come with 2 GB microSD card with SD card adaptor.

\* To order, specify model number, temperature range, output and interface, for an additional cost.

\*\* Insert cable length in meters. Extended cable is added to standard cable length, add suffix to model number, for an additional cost.

**Ordering Examples:** OS-MINI152-D-MA, miniature infrared temperature sensor with 15:1 optics, touch screen and configurable temperature range from -20 to 1000°C (-4 to 1832°F).

OS-MINI302-MA-XT, miniature infrared temperature sensor with 30:1 optics, 4 to 20 mA output and fix range from 0 to 1000°C (32 to 1832°F).

OS-MINI-HA201-D-C4, miniature infrared temperature sensor with high ambient sensing head and 20:1 optics, RS485 MODBUS, relay and touch screen.

OS-MINI 152-MA-MT-PMCE-3, miniature infrared temperature sensor with 15:1 optics, 4 to 20 mA output, 0 to 250°C (32 to 482°F) range and 3 m (10') of extension cable.

# Miniature Infrared Temperature Sensor for High Temperature Targets and Metals



OS-MINI22 Model



- ✓ Short Wavelength Measurement for Low-Emissivity Targets Such as Steel Rollers and Other Metal Surfaces
- ✓ Ranges from 100°C to 2000°C (212 to 3632°F)
- ✓ 4 to 20 mA or RS485 Modbus® Output Models
- ✓ Miniature Sensing Head to Fit Most Applications with Configurable Electronics Package
- ✓ Optional Touch Screen Display for Temperature Indication and Configuration
- ✓ Bright Red Alarm Screen
- ✓ Adjustable Emissivity on All Models
- ✓ Data Logging SD Card (Optional) on All Touch Screen Models
- ✓ MAX/MIN/AVG and Instantaneous Read Modes, Peak or Valley Hold, Reflected energy Compensation
- ✓ Sensing Head Sealed to IP65 (NEMA 4)
- ✓ Resistant to Errors Due to Moving Cables as on Robotic Arms

The OS-MINI22 model has miniature sensing head to fit most applications and configurable electronics package. They use short wavelength measurement for low-emissivity targets such as steel rollers and other metal surfaces. Field of views from 15:1 to 75:1 plus a close focus model are designed to fill most industrial



OS-MINI22-SN151-D-MA-MT miniature sensor with display, shown smaller than actual size.

requirements. The optional backlit touch screen interface mounted in the electronics module, provides an easy-to-read large, bright display of the measured Temperature, as well as controls allowing full configuration of the sensor. The graph view allows viewing the history of the measured temperature.

In alarm condition, the display turns bright red to provide an immediate and obvious alarm indication. The alarm levels and modes can be configured from the touch screen.

## Specifications

**Min/Max Adjustable Span (D-MA Model):** 100°C (212°F)/up to 1550°C (2822°F) within the full range

**Output:** 4 to 20 mA or RS485 Modbus (up to 247 sensors may be installed on a single Modbus network)

**Field of View:** See To Order chart on next page

**Accuracy:** ±2°C or 1% reading, whichever is greater

**Repeatability:** ±0.5°C or 0.5% reading, whichever is greater

**Emissivity Setting Range:** 0.10 to 1.00

**Emissivity Setting Method:**

-MA Models: Two rotary switches in electronics package

C4 and /D-C4 Models: RS485

D-MA/D-C4 Models: Touch screen

**Response Time,  $t_{90}$ :** ≥240 ms (90% response)

**Spectral Range:** 2.0 to 2.6 μm

**Supply Voltage:** 24 Vdc ±5%

**Maximum Current Draw:** 100 mA

**Maximum Loop Impedance (4 to 20 mA Output Models):** 900Ω

**“D-” Models Alarm Relays:**

2 x Single Pole alarm relays 24 Vdc, 1A, 500 Vdc isolation

## MECHANICAL

**Sensing Head:**

**Material:** 316 SS

**Dimensions:** 18 dia. x 45 mm (see diagram above)

**Mounting:** M16 x 1 mm thread, nut included

**Electronics Module:**

**Material:** Cast aluminum

**Dimensions:** 98 L x 64 W x 36 mm D (3.9 x 2.5 x 1.4")

<b>To Order</b>		
<b>OS-MINI22-SN[ * ]- [**]-[***]- [XXX]</b>		
<b>Field of View [ * ]</b>	<b>151</b>	15:1 optics [all ranges, 0 to 60°C (32 to 140°F) head]
	<b>251</b>	25:1 optics [all ranges, 0 to 60°C (32 to 140°F) head]
	<b>751</b>	75:1 optics [all ranges, 0 to 60°C (32 to 140°F) head]
	<b>801</b>	Close focus optics 60 mm @ 1500 mm (2.4" @ 59.1") [all ranges, 0 to 60°C (32 to 140°F) head]
<b>Output Display [**]</b>	<b>MA</b>	4 to 20 mA (no display) fixed range
	<b>D-MA</b>	4 to 20 mA, touch screen display, adjustable range, 2 alarm relays
	<b>C4</b>	RS485 Modbus output (no display), digital output, full temperature range
	<b>D-C4</b>	RS485 Modbus output, touch screen display, full temperature range, 2 alarm relays
<b>Temperature Range [***]</b>	<b>PT</b>	100 to 400°C (212 to 752°F) only valid for 15:1 optics
	<b>MT</b>	250 to 1000°C (482 to 1832°F)
	<b>HT</b>	450 to 2000°C (842 to 3632°F)
<b>Extra Cable Length [XXX]</b>	Add total length in meters up to 30 m (98') [1 m (3') is standard]	

#### Accessories

<b>Model No.</b>	<b>Description</b>
<b>MINI-MSD</b>	Micro SD card
<b>OS210-LSTS</b>	Laser sighting tool
<b>OS210-ABS</b>	Adjustable mounting bracket (3-axis)
<b>OS210-FBS</b>	Fixed mounting bracket (1-axis)
<b>OS210-DLSB</b>	Dual laser sighting bracket
<b>OS210-APSN</b>	Air purge collar
<b>OSMINI-D6</b>	6-channel Modbus temperature indicator with touch screen display and data logging

*Comes with OS-MINI22, sensing head and 1 m (3') cable, electronics module and operators manual.*

**Ordering Example:** *OS-MINI22-SN251-D-MA-MT, OS-MINI with 2.2 μm spectral range, 25:1 field of view, touch screen display, 4 to 20 mA output and 2 alarm relays, and 250 to 1000°C (482 to 1832°F) temperature range.*

# USB Infrared Temperature Sensor for Benchtop, Laboratory and Education

## OS-MINIUSB



- ✓ **Miniature Non-Contact Temperature Sensor with USB Communications**
- ✓ **Measures Non-Metal Surfaces from -20 to 1000°C (-4 to 1832°F)**
- ✓ **Fast Response Time: 125 ms**
- ✓ **USB Cable and PC Software Included for Data Logging and Configuration**
- ✓ **Open Modbus® Protocol—Use Your Own Software to Communicate with the Sensor**

The OS-MINIUSB is a miniature infrared sensor that measures the surface temperature of a solid or liquid without contact. It can measure non-metal surfaces between -20 and 1000°C (-4 and 1832°F), with a response time of just 125 ms.

Materials including paper, thick plastics, rubber, food and organic materials, as well as painted metals and most dirty, rusty or oily surfaces, are measured accurately, safely and cleanly.

A choice of optics is available to measure small or large targets at distances ranging from a few millimeters up to tens of meters.

The OS-MINIUSB has a rugged stainless steel housing, sealed to IP65, and is built to withstand ambient temperatures of up to 75°C (167°F).

### Compact

The sensor is just 45 mm (1.77") long (plus cable gland), so it can fit into very small spaces. The USB interface is built into the sensor, so there is no need for additional bulky interface modules.



OS-MINIUSB-SN21 shown slightly larger than actual size.

### Benchtop and Laboratory

With the precision and robustness of our industrial pyrometers, and the plug-and-play convenience of USB, the OS-MINIUSB is the ideal fixed mount IR temperature sensor for testing and experimentation.

### Education

The OS-MINIUSB is ideal for teaching science concepts such as emissivity, reflectivity, thermal conductivity, energy transfer, insulation and internal energy.

### Temperature Display Features

- Graph of measured temperature and sensor temperature
- Sensor configuration
- Data logging to an Excel® compatible file
- Connect multiple sensors to the same software
- Simple, touch-friendly interface
- Free software included with every sensor; download from the OMEGA website
- Or use the provided Modbus details to connect the sensor to your own software



### Specifications

**Temperature Range:** -20 to 1000°C (-4 to 1832°F)

**Interface:** USB

**Accuracy:** ±1% of reading or ±1°C whichever is greater

**Repeatability:** ±0.5% of reading or ±0.5°C whichever is greater

**Emissivity Setting:** 0.2 to 1.0

**Response Time:** t90 125 ms (90% response)

**Spectral Range:** 8 to 14 μm

**Supply Voltage:** 5 Vdc (provided by USB)

**Supply Current:** 50 mA max

**VIRTUAL COM PORT**

**Baud Rate:** 9600 baud \*

**Format:** 8 data bits, no parity, 1 stop bit \*

**Protocol:** Modbus over Serial Line

\* Other configurations available upon request.

## CONFIGURATION

**Configuration Method:** Via USB using included software or Modbus

**Configurable Parameters:** Emissivity Setting, Averaging, Reflected Energy Compensation

## MECHANICAL

**Construction:** Stainless Steel

**Dimensions:** 18 mm Dia x 45 mm L (0.71 x 1.8")

**Thread Mounting:** M16 x 1 mm pitch

**Cable Length:** 1.5 m (5')

**Weight with Cable:** 85 g (3 oz)

## ENVIRONMENTAL

**Environmental Rating:** IP65

**Ambient Temperature:** 0 to 75°C (32 to 167°F)

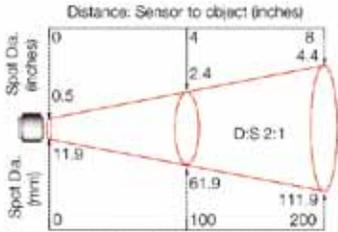
**Relative Humidity:** 95% max, non-condensing

## CONFORMITY

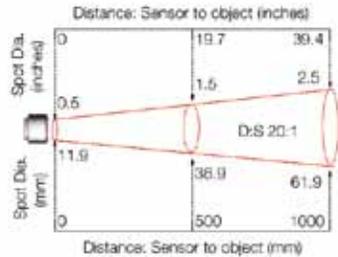
**RoHS Compliant:** Yes

**Electromagnetic Compatibility:** EN61326-1, EN61326-2-3 (Electrical Equipment for Measurement, Control and Laboratory Use - EMC Requirements - Industrial)

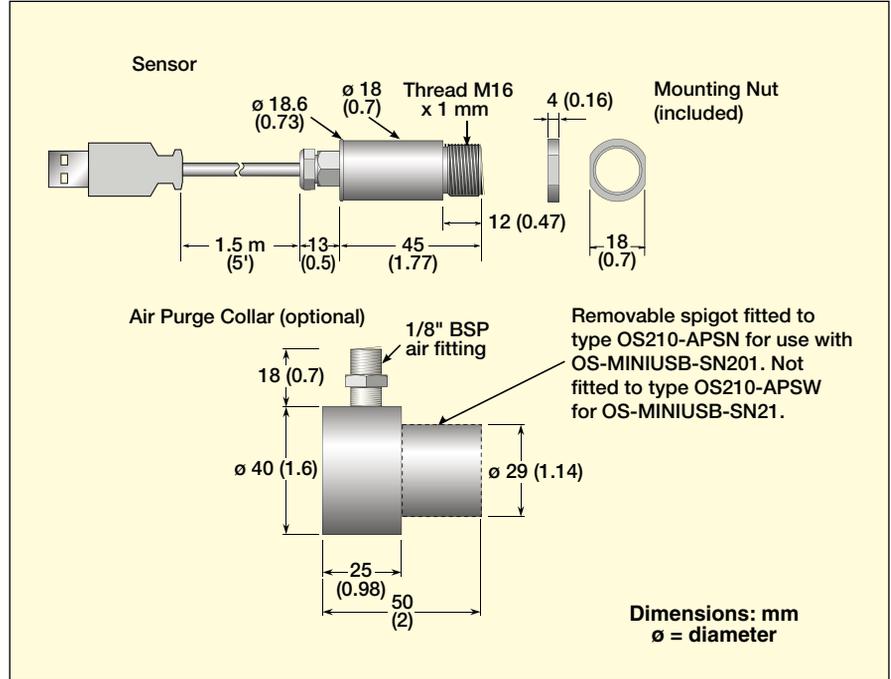
**Diameter of target spot measured versus distance from sensing head (90% energy)**



**OS-MINIUSB-SN21**



**OS-MINIUSB-SN201**



## To Order

Model No.	Field of View
OS-MINIUSB-SN21	OS-MINIUSB sensor with 2:1 divergent optics
OS-MINIUSB-SN201	OS-MINIUSB sensor with 20:1 divergent optics

## Accessories

Model No.	Description
OS210-ABS	Adjustable mounting bracket (2-axis)
OS210-FBS	Fixed mounting bracket
OS210-APSW	Air purge collar for OS-MINIUSB-SN201
OS210-APSN	Air purge collar for OS-MINIUSB-SN21
OS210-LSTS	Laser sighting tool (includes laser)

Comes complete with sensing head, mounting nut, USB cable, USB connector, and software.

**Ordering Example:** OS-MINIUSB-SN201, miniature infrared sensor with USB output and 20:1 divergent optics.