Max/Min Record

This mode is invoked by pressing the ᵛ^ key. The instrument will continuously monitor and display the current reading, but will store both the maximum and minimum values.

The display will show ᵛ^.

To display the stored values, press the ᵛ^ button again, and the maximum reading will be shown (indicated by ^ on the display). Pressing the ᵛ^ button again will show the minimum value (indicated by ᵛ).

A further press returns the instrument to the recording mode, showing the current temperature (indicated by ᵛ^).

During interrogation, the instrument continues to store the maximum and minimum values.

To reset the Max/Min recorder function, switch off the instrument by pressing the O button.

NOTE: When ᵛ^ is shown on the display, the auto shut-off is disabled.

MEASUREMENT AREA

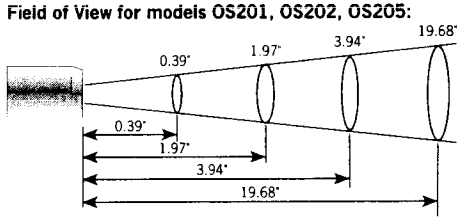
For best results, it is important to select the model most suited to the application. Models OS201, OS202 and OS205 are most suited to close range monitoring and will not work well with distant objects because at such distances they will require a large target due to the wide viewing angle.

Models OS203 and OS204 are better suited for long range monitoring, and when the temperature of the target is much greater than ambient because heat radiation will warm the lens, creating a secondary target. This will cause erroneous readings. See Field of View diagrams below.

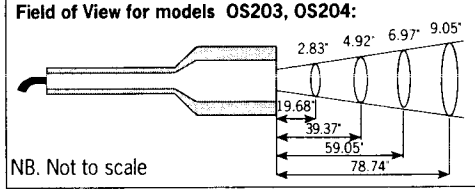
ACCESSORY

Protective Cover (Rubber Boot) OS200-COVER.

Field of View for models OS201, OS202, OS205:



Field of View for models OS203, OS204:



NB. Not to scale

CERTIFICATE OF CALIBRATION

This instrument has been calibrated using 'black body' heat sources:

Instrument Type_____ Serial Number _____

Tested By_____ Date_____

SOURCE TEMPERATURE	INSTRUMENT READING

Servicing USA and Canada: Call OMEGA Toll Free

OMEGA Engineering, Inc.

One Omega Drive, Box 4047
Stamford, CT 06907-0047 U.S.A.
Headquarters: (203) 359-1660
Sales: 1-800-826-6342 / 1-800-TC-OMEGA
Customer Service: 1-800-622-2378 / 1-800-622-BEST
Engineering: 1-800-872-9436 / 1-800-USA-WHEN
FAX: (203) 359-7700 TELEX: 996404 EASYLINK 62968934 CABLE OMEGA

Servicing Europe: United Kingdom Sales and Distribution Center

OMEGA Technologies Ltd.

25 Swannington Road, Broughton Astley, Leicestershire
LE9 6TU, England
Telephone: 44 (0455) 285520 FAX: 44 (0455) 283912

RETURN REQUESTS / INQUIRIES

Direct all warranty and repair requests/inquiries to the OMEGA ENGINEERING Customer Service Department. Call toll free in the USA and Canada: 1-800-622-2378, FAX: 203-359-7811; International: 203-359-1660, FAX: 203-359-7807.

BEFORE RETURNING ANY PRODUCT(S) TO OMEGA, YOU MUST OBTAIN AN AUTHORIZED RETURN (AR) NUMBER FROM OUR CUSTOMER SERVICE DEPARTMENT (IN ORDER TO AVOID PROCESSING DELAYS). The assigned AR number should then be marked on the outside of the return package and on any correspondence.

FOR **WARRANTY** RETURNS, please have the following information available BEFORE contacting OMEGA:

1. P.O. number under which the product was PURCHASED,
2. Model and serial number of the product under warranty, and
3. Repair instructions and/or specific problems you are having with the product.

FOR **NON-WARRANTY** REPAIRS OR **CALIBRATION**, consult OMEGA for current repair/calibration charges. Have the following information available BEFORE contacting OMEGA:

1. Your P.O. number to cover the COST of the of the repair/calibration,
2. Model and serial number of product, and
3. Repair instructions and/or specific problems you are having with the product.

OMEGA's policy is to make running changes, not model changes, whenever an improvement is possible. That way our customers get the latest in technology and engineering.

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OS200

Infrared Thermometers

Operating Instructions

OMEGA®
An OMEGA Technologies Company

M1752/1093

OS200 Series

The OS200 Series of infrared non-contact thermometers offers various functions. These operating instructions cover all models, therefore some of the options described may not apply to your instrument.

PRINCIPLE OF OPERATION

All bodies above absolute zero emit infrared radiation at a rate which varies with temperature.

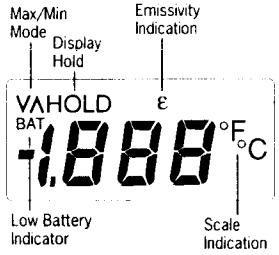
This energy is collected by a thermopile and the resulting signal is amplified and linearized.

Emissivity ε

At a given temperature, some surfaces are more efficient emitters of infrared radiation than others. On a scale of 0 to 1, a perfect surface (known as a "black body") has an emissivity of 1, while a highly polished metal surface (a poor emitter of infrared radiation) has an emissivity of typically 0.1 or less. Most non-metals have emissivity values around 0.85 to 0.95.

Please note that as a result of emissivity variation, temperature measurement using infrared can be less accurate than standard contact thermometry.

The Display



BATTERY INSTALLATION

Detach the battery compartment cover by removing the screw from the rear of the instrument, and sliding the cover away from the instrument.

Connect one 9 volt battery (type MN1604 or equivalent) and lay it over the insulation flap. Do not fit under the insulation flap as this could cause the battery terminals to short circuit. Refit compartment cover.

When "BAT" shows on display, the battery needs replacing.

No further readings should be taken until a new battery is fitted.

INSTRUMENT OPERATION

All Models

Turn the instrument on by depressing the left hand side of the button marked ● on the front of the instrument.

To switch the instrument off, depress the right hand side of the button marked O .

There is an auto shut-off facility which will turn the instrument off automatically after about 5 minutes.

NOTE: On Models OS205 and OS204, if the Max/Min feature is enabled, the auto shut-off is disabled.

For Best Results

Thermal shock (e.g., taking an instrument from a cold car into a warm office) will impair the accuracy of a reading.

If a change in ambient temperature occurs, allow the instrument and probe to stabilize at the new temperature for about 15 minutes before taking readings. The ambient operating range is 14 to 122°F (-10°C to +50°C).

No regular maintenance is required apart from keeping the lens dust free with a soft brush or soft lint free cloth as any dirt build up will affect the performance of the instrument. Take care not to scratch the lens surface or apply too much pressure.

As with any measuring instrument, periodic calibration checks are recommended.

Positioning the Instrument

Point the sensor at the body to be measured.

When measuring flat surfaces, it is advisable to point the instrument at right angles to the surface. This minimizes unwanted reflections from other heat sources which may distort the reading.

More accurate readings are achieved if the target is bigger than the measurement area (see Field of View diagrams overleaf).

Back Light

All models have a back light feature to allow the instrument to be used in poor light conditions. It can be selected by depressing and holding down the left hand side of the button marked ●.

ADDITIONAL OPTIONS for Models OS205 and OS204

Display Hold

Pressing the HOLD button freezes the display. HOLD will be displayed in the top left hand corner of the display.

Depress button again to return to normal display.

Adjusting Emissivity

Emissivity can either be set to a value directly, or a body of a known temperature can be measured and then the emissivity adjusted to obtain the correct reading.

Setting Emissivity

Press the T/ε button. The "ε" and the present value of emissivity will be shown on the display. Press the ▲or ▼buttons to adjust the emissivity to the required value. Press T/ε to return to the measurement mode. The "ε" value will be retained when the instrument is turned off.

Care should be taken when using emissivity tables as they may not account for dust particles or the surface texture of the material. (e.g., rough surfaces have a higher emissivity than polished surfaces).

In practice a setting of around 0.95 will cover the majority of materials. For accurate results, the surface temperature should first be established by a contact temperature measurement and the emissivity compensation adjusted until the OS204 or OS205's temperature reading agrees.

Adjusting Emissivity to Match a Known Temperature

Point the sensor at the body of the known temperature. When the reading stabilizes press the HOLD button.

Now press the ▲and ▼ buttons to obtain the same temperature reading on the display. The emissivity will now be correct for that material. Press HOLD to return to temperature monitoring mode. To display the emissivity, press the T/ε button. The emissivity value should be recorded for future measurements on the same material.

Note: This method of determining emissivity is not suitable when the target temperature is close to ambient.

°C/°F Selection

Select the desired temperature scale by pressing the C/F button. The selected scale is confirmed by the °C or °F symbol on the display and is recalled next time the instrument is turned on.

COMMON SPECIFICATIONS	
Sample Rate	2 times per second
Operating Range (Ambient)	14 to 122°F (-10 to +50°C)
Battery Type	9V (MN1604 or equivalent)
Battery Life (using an alkaline battery)	500 hours typical
Low Battery Check	'BAT' appears on display
Auto Switch-off Time	≈5 minutes (disabled in Max/Min mode)
Display	3 1/2 digit LCD
Back Light	Standard by holding down ● button
Spectral Response	6 to 14µm
Case	One piece moulded plastic
Dimensions (Excluding Probe)	5.6" X 2.8" X 1.04" (140 X 70 X 26mm)

SPECIFICATION	OS202F	OS202C	OS201F	OS201C	OS205	OS203F	OS203C	OS204
Fresnel Lens						✓	✓	✓
No Lens	✓	✓	✓	✓	✓			
Range	-5 to +480°F	-20 to +250°C	-5 to +480°F	-20 to +250°C	-20 to +250°C -5 to +480°F	-5 to +480°F	-20 to +250°C	-20 to +250°C -5 to +480°F
Resolution	1°F	1°C	1°F	1°C	1°C/1°F	1°F	1°C	1°C/1°F
Accuracy (59 to 77°F Ambient, ε=0.95)	±1% rdg ±2°F	±1% rdg ±1°C	±1% rdg ±2°F	±1% rdg ±1°C	±1% rdg ±1°C/±2°F	±1% rdg ±4°F	±1% rdg ±2°C	±1% rdg ±2°C/±4°F
Max/Min Record Mode					✓			✓
Display Hold					✓			✓
Field of View	1cm at 1cm	1cm at 1cm	1cm at 1cm	1cm at 1cm	1cm at 1cm	230mm at 2m	230mm at 2m	230mm at 2m
Remote Probe						✓	✓	✓
Semi Flexible Head Mounted on Case			✓	✓	✓			
Semi Flexible Head Mounted on Probe	✓	✓						
Emissivity Adjustment	Fixed ε=0.95	Fixed ε=0.95	Fixed ε=0.95	Fixed ε=0.95	ε=0.1 to 1.0	Fixed ε=0.95	Fixed ε=0.95	ε=0.1 to 1.0
Weight (Including Probe)	353 grams	353 grams	250 grams	250 grams	250 grams	290 grams	290 grams	290 grams