1 YEAR WARRANTY

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User's Guide

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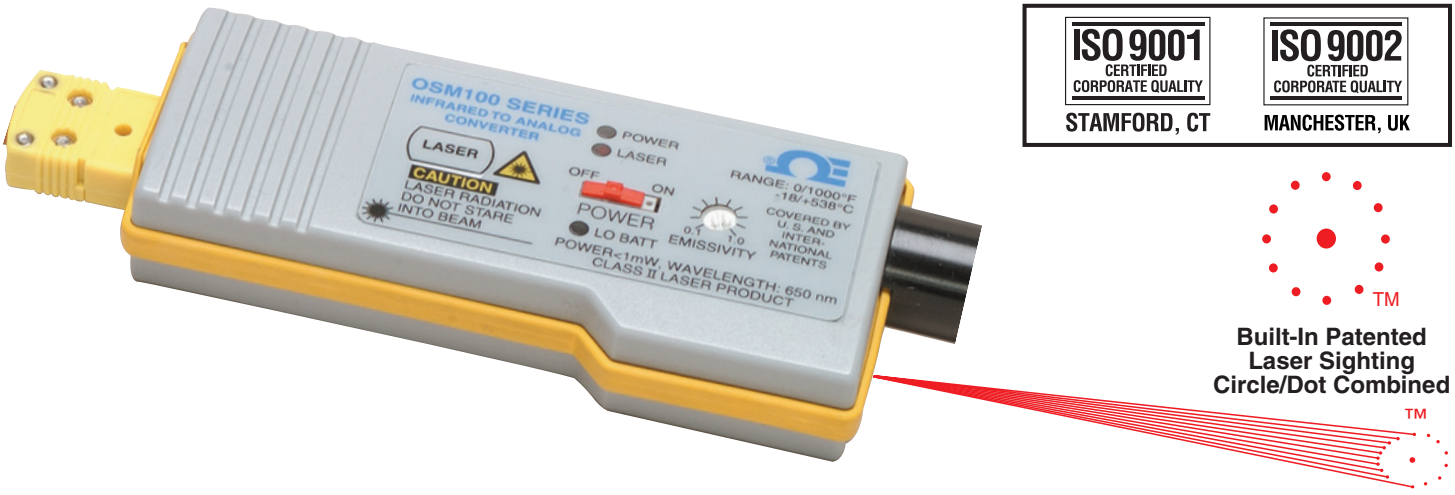

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Built-In Patented Laser Sighting Circle/Dot Combined

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OSM101
Portable Infrared To Analog Converter Module

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Introduction

The model OSM101 is a very low cost battery powered, portable infrared to analog converter module. It measures a temperature range of -18 to 538°C (0 to 1000°F), and provides a compensated K type thermocouple output which can go to any thermocouple meter, or recorder for display and monitoring. The OSM101 has a built-in laser circle for aiming and indicating the optical field of view.

Each unit comes with a 3.5 VDC Lithium Battery, User's Manual, and an SMP Male to Male K type retractable cable.

Caution and Safety Information

General

- If the equipment is used in a manner not specified in this manual, the protection provided by the equipment may be impaired.
- The installation category is one (1).
- There are no user replaceable fuses in this product.
- The output terminals of this product are for use with equipment (digital meters, chart recorders, etc,) which have no accessible live parts. Such equipment should comply with all the applicable safety requirements.
- Do not operate the equipment in flammable or explosive environments.
- Use the recommended battery to operate this product.
- Do not operate the unit when the battery cover is open.
- Do not open batteries, dispose of in fire, heat above 100°C (212°F), expose contents to water, recharge, put in backwards, mix with used or other battery types. It may explode or leak and cause personal injury.

Laser Sighting

- Use of controls or adjustments or performance of procedures other than those specified here may result in hazardous laser radiation exposure.
- Do not look at the laser beam coming out of the lens or view directly with optical instruments. Eye damage can result.
- Use extreme caution when operating the laser sighting.
- Never point the laser beam at a person.
- Keep out of reach of all children.
- Do not attempt to open the unit. There are no user serviceable parts.

Safety Warnings and IEC Symbols

This device is marked with international safety and hazardous symbols in accordance with IEC1010. It is important to read and follow all the precautions and instructions in this manual before operating or commissioning this device as it contains important information relating to safety and EMC. Failure to follow all the safety precautions may result in injury and or damage to your equipment.

IEC Symbol	Description
	Caution - Refer to the accompanying document(s).
	Direct Current
	Laser Symbol

Operation

The lithium battery is already installed in the unit. In case you need to check or replace the battery, remove the two screws in the back to get to the battery compartment.

Set the Power Switch to the ON position. The Power LED starts to flash. Connect the thermocouple output of the OSM101 to a thermocouple meter using the retractable cable provided.

There is a momentary Laser button on the unit. Press and hold the laser key. The laser LED as well as the laser beam (Circle) starts to flash. Releasing the laser key will turn off the laser beam. The laser circle is an indication of the optical field of view of the device. There is an offset of 19 mm (0.75 inches) between the center of the laser circle and the actual field of view.

There is a one turn Emissivity potentiometer on the unit. Set the Emissivity of the target based on the Emissivity chart provided. Aim at the target. Make sure that the target fills the optical field of view completely. Measure the temperature accordingly. Set the Power switch to the OFF position when you are done.

Please refer to Figures 1, 2, and 3 for product descriptions, general dimensions, and the field of view.

Accessories	
Model No.	**Description**
OM-NOMAD-BATT	3.5 VDC Lithium Battery
SC-HH500	Soft Carrying Case
RECK1-10	Retractable Cable, K-T/C, Male to Male, 1 Ft.
RECK4-10	Retractable Cable, K-T/C, Male to Male, 4 Ft.

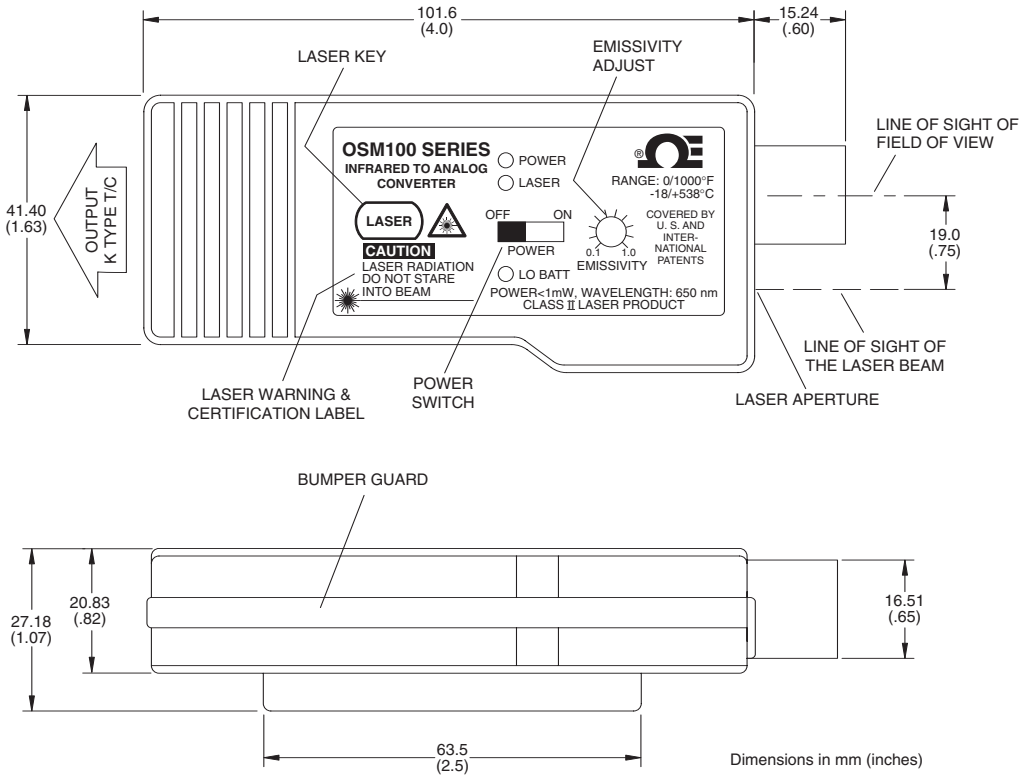

Figure 1. General Dimensions and Descriptions

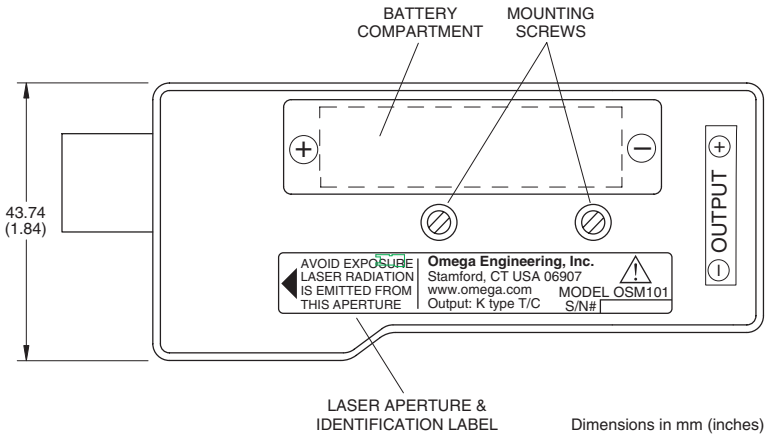

Figure 2. Back Side View and Descriptions

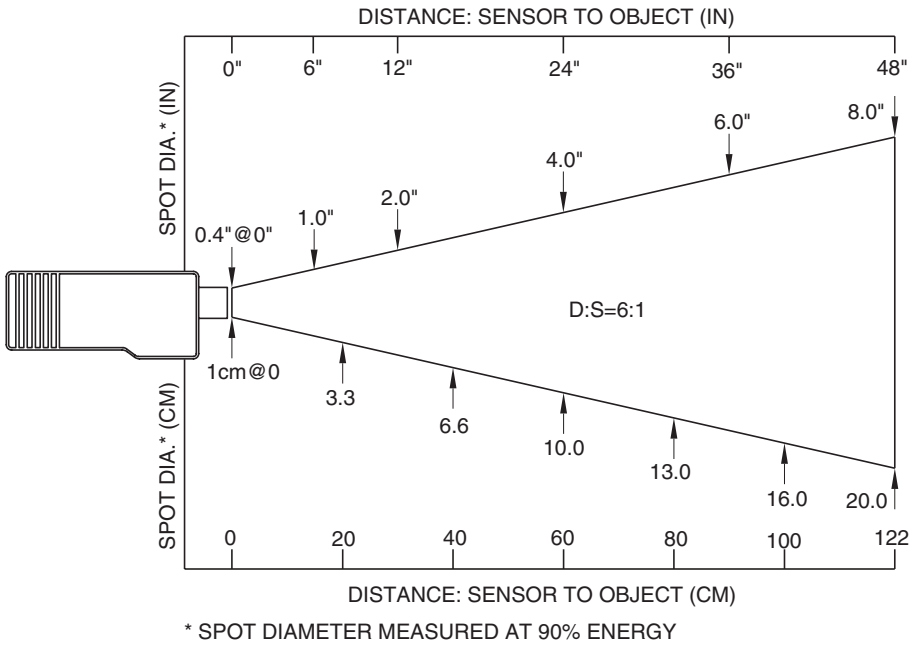

Figure 3. Optical Field of View

SPECIFICATIONS

1 - General

Temperature Range	0 to 1000°F (-18 to 538°C)
Accuracy @ 22°C (72°F) ambient & Emissivity >= 0.95	3% of Rdg or 4°F whichever is greater
Repeatability	1% of Rdg.
Optical Field of View	6 to 1 (Distance to Spot Size)
Spectral Response	5 to 14 microns
Response Time	150 msec, 0 to 63% of final value
Emissivity Range	0.1 to 1.00 , Adjustable
Analog Output	K type Thermocouple, compensated
Output Connection	Universal Type K female socket accepts both Miniature (SMP) and standard (OST) type connectors
Power	3.5 VDC, AA Size Lithium Battery - 1900 mAH
Battery Life	11 Days, continuous (No Laser) 6 Days, continuous with Laser
Power Indication	Flashing red LED, twice per second
Low Battery Indication	Flashing red LED, twice per second
Operating Ambient Temperature	0 to 50°C (32 to 122°F)
Operating Relative Humidity	Less than 95% RH, non-condensing
Dimensions	117 L x 47 H x 27 D mm (4.6" L x 1.84" H x 1.07" D)
Weight	82 g (0.180 lbs)

2- Laser Sighting

Laser Wavelength (Color)	650 nm (Red)
Operating Distance	Up to 7.6 m (25 feet)
Laser Sighting Type	Built-in, Laser circle with a Laser dot in the center
Max. Laser Power Output	Less than 1 mW
Safety Classification	Class 2
FDA Classification	Class II Laser Product
Laser Beam Diameter	Less than 5 mm
Beam Divergence	Less than 2 mrad
Laser Power Switch	Laser key - Momentary switch
Laser power Indication	Flashing red LED, twice per second
Laser Warning & Certification Label	On the front of the unit
Identification & Laser Aperture Label	On the back of the unit

Emissivity Table

METALS

Material	Emissivity (ε)
Aluminum – pure highly polished plate	0.04 – 0.06
Aluminum – heavily oxidized	0.20 – 0.31
Aluminum – commercial sheet	0.09
Brass – dull plate	0.22
Brass – highly polished, 73.2% Cu, 26.7% Zn	0.03
Chromium – polished	0.08 – 0.36
Copper – polished	0.05
Copper – heated at 600°C (1110°F)	0.57
Gold – pure, highly polished or liquid	0.02 – 0.04
Iron and steel (excluding stainless) – polished iron	0.14 – 0.38
Iron and steel (excluding stainless) – polished cast iron	0.21
Iron and steel (excluding stainless) – polished wrought iron	0.28
Iron and steel (excluding stainless) – oxidized dull wrought iron	0.94
Iron and steel (excluding stainless) – rusted iron plate	0.69
Iron and steel (excluding stainless) – polished steel	0.07
Iron and steel (excluding stainless) – polished steel oxidized at 600°C (1110°F)	0.79
Iron and steel (excluding stainless) – rolled sheet steel	0.66
Iron and steel (excluding stainless) – rough steel plate	0.94 – 0.97
Lead – gray and oxidized	0.28
Mercury	0.09 – 0.12
Molybdenum filament	0.10 – 0.20
Nickel – polished	0.07
Nickel – oxidized at 650-1254°C (1200°F – 2290°F)	0.59 – 0.86
Platinum – pure polished plate	0.05 – 0.10
Platinum – wire	0.07 – 0.18
Silver – pure and polished	0.02 – 0.03
Stainless steel – polished	0.07
Stainless steel – Type 301 at 232-940°C (450°F – 1725°F)	0.54 – 0.63
Tin – bright	0.06
Tungsten – filament	0.39
Zinc – polished commercial pure	0.05
Zinc – galvanized sheet	0.23

NONMETALS

Material	Emissivity (ε)
Asbestos Board	0.96
Asphalt, tar, pitch	0.95 – 1.00
Brick – red and rough	0.93
Brick – fireclay	0.75
Carbon – filament	0.53
Carbon – lampblack - rough deposit	0.78 – 0.84
Glass - Pyrex, lead, soda	0.85 – 0.95
Marble – polished light gray	0.93
Paints, lacquers, and varnishes – Black matte shellac	0.91
Paints, lacquers, and varnishes – aluminum paints	0.27 – 0.67
Paints, lacquers, and varnishes – flat black lacquer	0.96 – 0.98
Paints, lacquers, and varnishes – white enamel varnish	0.91
Porcelain – glazed	0.92
Quartz – opaque	0.68 – 0.92
Roofing Paper	0.91
Tape – Masking	0.95
Water	0.95 – 0.96
Wood – planed oak	0.90

NOTES:

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WARRANTY/DISCLAIMER

OMEGA ENGINEERING, INC. warrants this unit to be free of defects in materials and workmanship for a period of **13 months** from date of purchase. OMEGA's WARRANTY adds an additional one (1) month grace period to the normal **one (1) year product warranty** to cover handling and shipping time. This ensures that OMEGA's customers receive maximum coverage on each product.

If the unit malfunctions, it must be returned to the factory for evaluation. OMEGA's Customer Service Department will issue an Authorized Return (AR) number immediately upon phone or written request. Upon examination by OMEGA, if the unit is found to be defective, it will be repaired or replaced at no charge. OMEGA's WARRANTY does not apply to defects resulting from any action of the purchaser, including but not limited to mishandling, improper interfacing, operation outside of design limits, improper repair, or unauthorized modification. This WARRANTY is VOID if the unit shows evidence of having been tampered with or shows evidence of having been damaged as a result of excessive corrosion; or current, heat, moisture or vibration; improper specification; misapplication; misuse or other operating conditions outside of OMEGA's control. Components in which wear is not warranted, include but are not limited to contact points, fuses, and triacs.

OMEGA is pleased to offer suggestions on the use of its various products. However, OMEGA neither assumes responsibility for any omissions or errors nor assumes liability for any damages that result from the use of its products in accordance with information provided by OMEGA, either verbal or written. OMEGA warrants only that the parts manufactured by the company will be as specified and free of defects. OMEGA MAKES NO OTHER WARRANTIES OR REPRESENTATIONS OF ANY KIND WHATSOEVER, EXPRESSED OR IMPLIED, EXCEPT THAT OF TITLE, AND ALL IMPLIED WARRANTIES INCLUDING ANY WARRANTY OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE ARE HEREBY DISCLAIMED. LIMITATION OF LIABILITY: The remedies of purchaser set forth herein are exclusive, and the total liability of OMEGA with respect to this order, whether based on contract, warranty, negligence, indemnification, strict liability or otherwise, shall not exceed the purchase price of the component upon which liability is based. In no event shall OMEGA be liable for consequential, incidental or special damages.

CONDITIONS: Equipment sold by OMEGA is not intended to be used, nor shall it be used: (1) as a "Basic Component" under 10 CFR 21 (NRC), used in or with any nuclear installation or activity; or (2) in medical applications or used on humans. Should any Product(s) be used in or with any nuclear installation or activity, medical application, used on humans, or misused in any way, OMEGA assumes no responsibility as set forth in our basic WARRANTY/DISCLAIMER language, and, additionally, purchaser will indemnify OMEGA and hold OMEGA harmless from any liability or damage whatsoever arising out of the use of the Product(s) in such a manner.

RETURN REQUESTS/INQUIRIES

Direct all warranty and repair requests/inquiries to the OMEGA Customer Service Department. BEFORE RETURNING ANY PRODUCT(S) TO OMEGA, PURCHASER MUST OBTAIN AN AUTHORIZED RETURN (AR) NUMBER FROM OMEGA'S 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.

The purchaser is responsible for shipping charges, freight, insurance and proper packaging to prevent breakage in transit.

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

1. Purchase Order 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 relative to the product.

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

1. Purchase Order number to cover the COST of the repair,
2. Model and serial number of the product, and
3. Repair instructions and/or specific problems relative to the product.

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