1 YEAR WARRANTY

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User's Guide

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OS1562
Fiber Optic Infrared Sensor

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ISO 9001 Certified
One Omega Drive, P.O. Box 4047
Stamford, CT 06907-0047
TEL: (203) 359-1660
FAX: (203) 359-7700
e-mail: info@omega.com

Canada:
976 Bergar
Laval (Quebec) H7L 5A1, Canada
TEL: (514) 856-6928
FAX: (514) 856-6886
e-mail: info@omega.ca

For immediate technical or application assistance:

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Czech Republic:
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TEL: +420 (0)59 6311899
FAX: +420 (0)59 6311114

Toll Free: 0800-1-66342
e-mail: info@omegashop.cz

Germany/Austria:
Daimlerstrasse 26, D-75392 Deckenpfronn, Germany
TEL: +49 (0)7056 9398-0
FAX: +49 (0)7056 9398-29
Toll Free in Germany: 0800 639 7678
e-mail: info@omega.de

United Kingdom:
ISO 9002 Certified
One Omega Drive, River Bend Technology Centre
Northbank, Irlam, Manchester
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It is the policy of OMEGA Engineering, Inc. to comply with all worldwide safety and EMC/EMI regulations that apply. OMEGA is constantly pursuing certification of its products to the European New Approach Directives. OMEGA will add the CE mark to every appropriate device upon certification.

WARNING: These products are not designed for use in, and should not be used for, human applications.

UNPACKING

Remove the Packing List and verify that you have received all equipment. If you have any questions about the shipment, please call the OMEGA Customer Service Department at 1-800-622-2378 or (203) 359-1660.

When you receive the shipment, inspect the container and equipment for any signs of damage. Note any evidence of rough handling in transit. Immediately report any damage to the shipping agent.

NOTE

The carrier will not honor any damage claims unless all shipping material is saved for their inspection. After examining and removing contents, save packing material and carton in the event reshipment is necessary.

The following items are supplied in the box:

- OS1562 Infrared Sensor
- OS1562-Cable
- Operator's Manual

TABLE OF CONTENTS
OS1562 INFRARED SENSOR

SECTION 1

DESCRIPTION

1.1 GENERAL

The OMEGA® OS1562 Fiber Optic Infrared Sensor is a non-contact temperature measuring device. The OS1562 has a standard response time of 50 milliseconds. A principal feature of this system is the use of a flexible optical fiber cable which permits the observation of targets in remote or inaccessible locations.

Infrared heat radiation emitted by the target is collected by the fiber optic lens, and directed to a detector cell. A radiation chopper is used for signal stability. The signal from the detector is amplified and then linearized before being output to the cable connector or terminals on the rear of the device.

1.2 SPECIFICATIONS

Environmental temperature	
Electronic chassis	10 to 50 degrees C (50 to 122°F)
Fiber optics	10 to 150 degrees C (50 -to 122°F)
Emissivity control	.05 to 1.0 adjustable in .01 steps
Response time:	50 milliseconds (99% response to step input)
Calibration accuracy:	±1% of reading
Linearization accuracy:	±1% of reading or 2°C, 4°F whichever is greater
Ambient temperature change accuracy:	08% of full scale per degree C
Thermocouple output accuracy:	±1% of linearized output
Resolution:	Analog, less than 1 degree (F or C)
Fiber insertion repeatability:	1 degree (F or C)
Spectral response:	.75 - 2.5 microns

*Note all errors calculated using a blackbody temperature reference.

Power Supply Requirements:	+/- 15 VDC +/- 100 mA (+/- .05% regulation)
Output:	1 mV per degree (F or C) standard Optional output as ordered 0-10 Vdc, 4-20 mA, J T/C, K T/C
Size:	2.7" H x 4.0" W x 7.3" D
Power Consumption:	2 watts maximum
Weight:	4 lbs.
Mating Cable Connector:	PT06A-10-65 (SR)

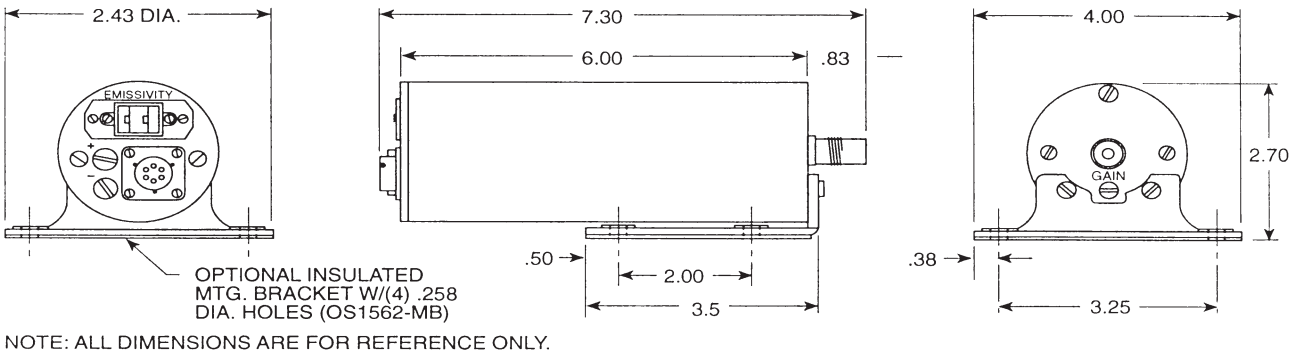

Figure 1-1. Outline Dimensions

SECTION 2

INSTALLATION

The electronics housing should be mounted with the OS1562-MB mounting bracket. This bracket electrically isolates the housing from ground. All grounding is done through the housing cable. If the OS1562-MB mounting bracket is not supplied, isolate the chassis from ground with a non-conductive material.

Mount the electronics housing in the vicinity of the measurement area. Although the electronics are temperature compensated for gain change, they are preferably mounted where it is shielded from direct thermal radiation or conduction in fluctuating thermal environments. A cool location is preferred to a warm one, but a stable location is most important. Note: A silicone RTV should be used around the emissivity window when being mounted in harsh environments.

2.1 CABLE CONNECTIONS

The electronics housing should be connected to the power supply and applicable inputs by use of the connecting cable. See drawing of the cable assembly. Simply plug in the connector on the end of the cable to the mating connector on the rear of the unit.

If a permanent type installation is to be made, we recommend that the cable be installed in steel conduit for protection and for further shielding.

2.2 OPTICAL FIBER ASSEMBLY

The end with the fiber optic lens is for viewing the target. The other end, with the knurled brass fitting, is for insertion into the front of the electronics housing.

The electronics housing end should be rotated during the insertion to ensure proper keying. (Keyway in electronics housing at 3 o'clock). The knurled retaining nut should be tightened hand tight. The fiber jacket on heavy duty braided fibers is torsionally stiff. (It does not twist). Let the viewing end rotate freely or use a service loop in the fiber to ease insertion into the electronics housing.

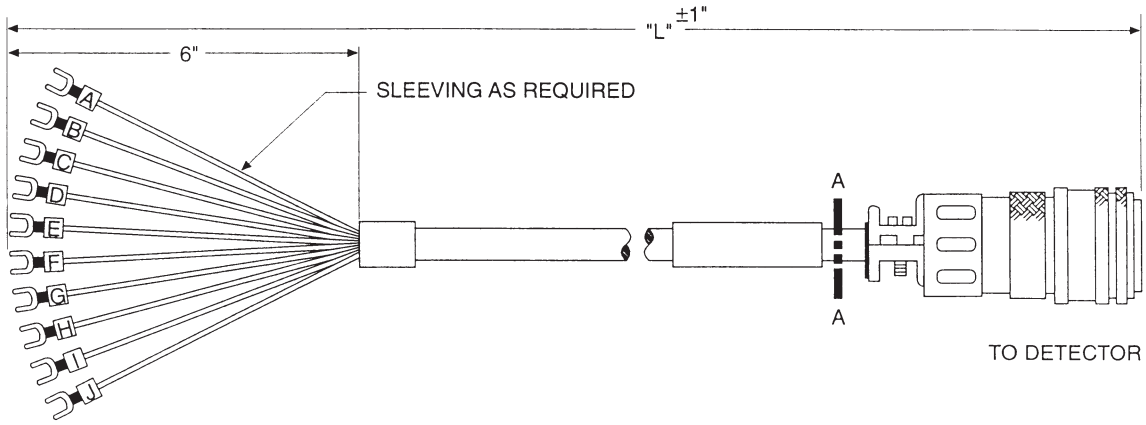

Figure 2-1. OS1562-Cable

2.3 OPTICAL ALIGNMENT

Alignment of the fiber assembly lens cell with the target is best performed by "back illuminating" the fiber assembly with the OS1500-BLS Backlight Source.

2.3.1 BIFURCATED FIBERS

In the case of a bifurcated assembly, the appropriate branch to be illuminated is the plain end without the knurled retaining nut. In all cases where a bifurcated assembly is used, the light source must be off while thermal measurements are being made. Otherwise, the light at the target can contribute falsely to the thermal signal. Bifurcated fibers project a doughnut of illumination. The center is the area of the target.

2.3.2 SINGLE FIBERS

With a standard fiber assembly, the detector head end should be removed from its receptacle and inserted into a light source such as the OS1500-BLS Variable High Intensity Source. The target spot will be projected on the surface being measured.

SECTION 3

OPERATION

3.1 APPLYING POWER

All cable connections should be made before turning on the power supply. The transducer should be allowed to warm up for a 30 minute period minimum.

3.1.1 EMISSIVITY CONTROL

This control should be set to .99 for targets which are known to be near-perfect infrared radiators, or set equal to the emissivity of the object being measured if they are not near perfect radiators, which will be the majority of cases. The control should be set to .99 during system calibration.

OMEGA can provide assistance in determining the emissivity of a given target, if needed.

3.1.2 GAIN

This is a multi-turn potentiometer used to adjust system gain for calibration. It is accessed by removing the sealscrew in the front end cap of the electronics housing.

3.2 REAR PANEL CONNECTIONS

3.2.1 POWER AND OUTPUT CABLE

The cable should be connected as described in Section 2-1. Also see input and output descriptions, and the cable diagram.

3.2.2 REAR PANEL TERMINAL CONNECTIONS

The two terminals, (TB1-1, TB1-2) marked plus and minus, are used for the optional thermocouple output. Only the applicable thermocouple wire can be connected to these terminals. Any other type of wire will result in inaccurate readings.

TERMINAL LUG	DESCRIPTION	USE
Cable pin A	+15 VDC	+15 VDC power supply input
Cable pin B	Common	Power supply common and common for optional additional 4-20 Ma output
Cable pin C	-15 VDC	-15 VDC power supply input
Cable pin D	mv/degree	Temperature output, one millivolt per degree C or F.
Cable pin E	Common	Common for mv/degree and optional additional 0-10 VDC output.
Cable pin F	Analog out	Optional 4-20 ma output (450 ohmload maximum), or 0-10 VDC output (2K ohm load minimum). All outputs are scaled to the temp. range ordered.
Cable pin G	Overall shield	Shield, tied to power supply common. If the chassis and fiber optic are isolated from earth ground, also tie overall shield to earth ground.
TB1-1	T/C out +	Thermocouple output positive, (use applicable thermocouple wire only.
TB1-2	T/C out -	Thermocouple output negative (use applicable thermocouple wire only).

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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.

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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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