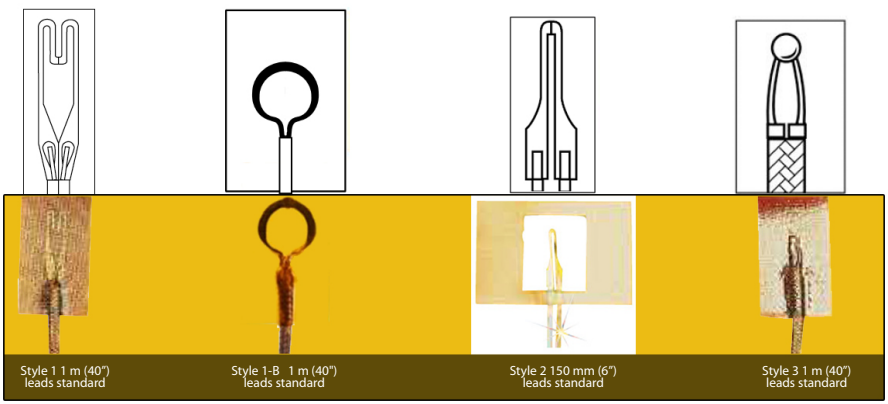
1 YEAR WARRANTY

OMEGA™

User's Guide

Shop online at omega.com

e-mail: info@omega.com
For latest product manuals:
https://www.omega.com/en-us/pdf-manuals



CO1, CO2, CO3
"Cement-On" Thermocouples

omega.com info@omega.com

Servicing North America:

U.S.A. Headquarters: Omega Engineering, Inc.
Toll-Free: 1-800-826-6342 (USA & Canada only) Customer Service: 1-S00-622-2378 (USA & Canada only)
Engineering Service: 1-800-872-9436 (USA & Canada only)
Tel: (203) 359-1660 Fax: (203) 359-7700
e-mail: info@omega.com

For Other Locations Visit omega.com/worldwide

Section 1 General Description

Style 1 & Style 1-B "Cement-On" Thermocouples are made from 0.005 Thin thermocouple embedded between two layers of high tempreture polymer / glass laminate. This laminate generally limits the maximum temperature for construction to 260° (500°F) continuous, 370°C (698°F) for short duration. The insulated lead wire is silicone impregnated glass braid. The sislicone impregration provides abrasion resistance, but is destroyed at approximately 205°(400° F). The glass braid provides electrical insulation to 480°C (896°F).

Style 1-B "Cement On" The thin sensor (0.008") is embedded between two thin, high-temperature polymer laminates which both support and electrically insulate the foil section as well as provide a flat surface for cementing. The polymer laminate, in general, determines the maximum temperature of the construction which is 260°C (500°F) continuous and up to 370°C (698°F) for short duration. Each Style 1 unit includes 1m (40")of glass braid insulated 30 gauge thermocouple wire which is bonded to the foil and strain relieved by laminate. An application instruction sheet accompanies each packaged Cement-On type thermocouples.

Style II "Cement-On" sensors are made from .0005 "foil with .002" leads. The foil leads are fastened to a polyimide film frame which is a tough, flexible, dimensionally stable material rated for 260°C (500°F) continuous service.

Style III "Cement-On's" are made from 30 gauge (0.010") diameter thermocouple wire. The thermocouple is bead welded and embedded between two layers Of paper thin polyimide film. This film is rated up to 370°C (698°F). The insulated lead Wire is silicone impregnated glass braid With the same qualities listed above for Style I. The table on the following page lists the maximum temperature for the three styles of thermocouples.

Model No.	Style	Thermocouple Type	Length mm (inches)	Maximum Temperature °C* (°F)		
				Continuous	600 hr.	10 hr.
CO1-K	1	K CHROMEGA™-ALOMEGA	1m (40")	260 (500)	315 (600)	370 (700)
CO1-E		E CHROMEGA™-Constantan	1m (40")	260 (500)	315 (600)	370 (700)
CO1-T		T Copper - Constantan	1m (40")	150 (300)	205 (400)	260 (500)
CO1-K-B	1-B	K CHROMEGA™-ALOMEGA	1m (40")	260 (500)	315 (600)	370 (700)
CO2-K	2	K CHROMEGA™-ALOMEGA™	50 mm (6"	540 (1000)	540 (1000)	650 (120)
CO2-E		E CHROMEGA™-Constantan	150 mm (6")	425 (800)	425 (800)	540 (1000)
CO2-T		T Copper-Constantan	150 mm (6")	150 (300)	150 (300)	260 (500)
CO3-J	3	J Iron - Constantan	1m (40")	260 (500)	370 (700)	370 (700)
CO3-K		K CHROMEGA™-ALOMEGA™	1m (40")	260 (500)	370 (700)	370 (700)
CO3-E		E CHROMEGA™-Constantan	1m (40")	260 (500)	370 (700)	370 (700)
CO3-T		T Copper-Constantan	1m (40")	205 (400)	260 (500)	370 (700)

Section 2 Installation

2.1 Using Adhesives

1. "Cement-OR" Thermocouples can be bonded to most surfaces using OB Epoxy Adhesives 100, 101, and 200. Each epoxy has different temperature ratings, cure characteristics, and thermal conductivity factors. Refer to the Omega Temperature Measurement Handbook for more information on OB Epoxies.

2. When using epoxies, be sure that the surfaces to be bonded are clean. Use an appropriate solvent or detergent for cleaning.

3. For temperatures above 5CO°F, use Omega CC High Temperature Cement to bond Style II "Cement-On" Thermocouples to most metals and ceramics. CC Cement is not recommended for Style I and Style III "Cement-OR's".

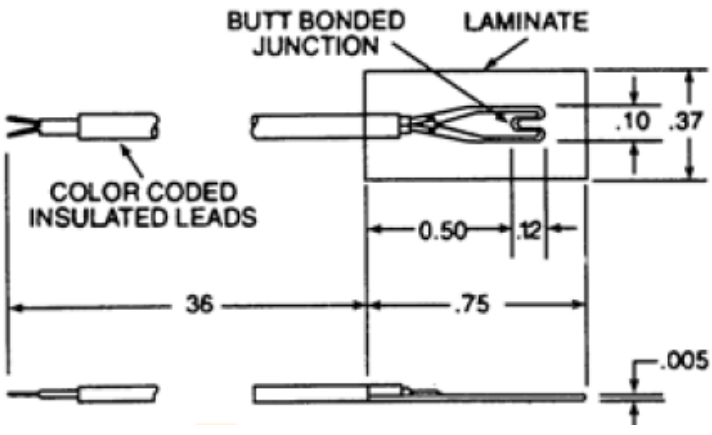
4. For applications under 26°C (500°F), use OB 200 Epoxy.

5. OB 200 is a specially formulated epoxy with high thermal conductivity. To retain the fast speed of response, use a thin layer of adhesive.

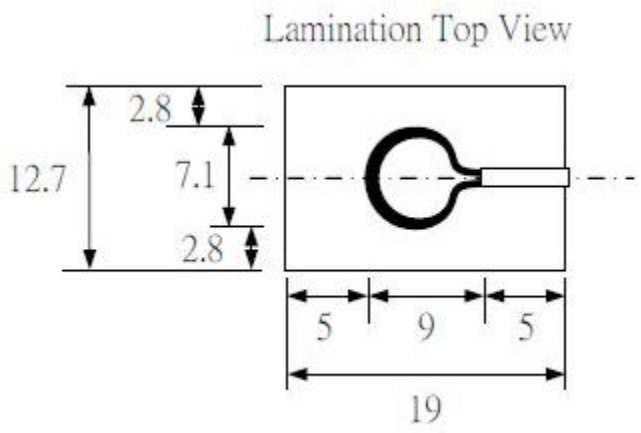
2.2 Installation Tips

Style I: Use a clamp to strain relief the lead wire downstream from the sensor

Style I



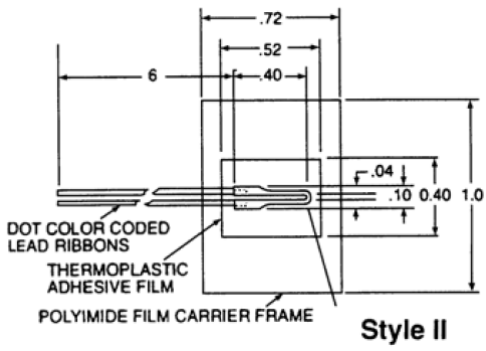
Style I-B



Style II

1. During application, the foil thermocouple can either be peeled from the frame or released by applying heat.

2. The .002" foil leads are uninsulated. Before working on electrically conductive surfaces, lay down a thin layer of insulating Omega CC Cement or OB Epoxy and let it dry. This ensures that the leads are fully insulated from the surface. Then apply a thin layer of the cement or epoxy to the surface, and brush the leads into it (use this step alone for non-conductive surfaces).



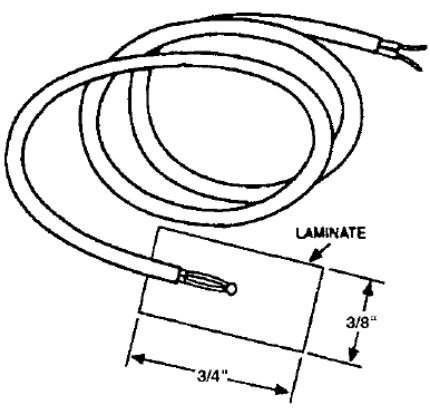
Style II

3. Bond insulated thermocouple lead wire to the foil leads by silver soldering or resistance welding. Use thirty gauge insulated thermocouple lead wire such as GG- (K or E or T)-30. Refer to the Omega Temperature Measurement Handbook for information on thermocouple wire.

4. Install Type T (Copper/Constantan) foil junction by carefully pressing into a flowed thin layer Of soft solder.

5. Type K (Chromega® / Alomega™) and Type E (Chromega®/Constantan) will not bond properly with soft solder. However, with care and skill, a bond can be made using a low temperature silver solder of less than IO00°F.

Style III: These "Cement-On" lhermocouples may be bonded to most surfaces using the same technique as for Style L



Style III

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 WARRANT Y /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 WARRANT Y 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.

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

OMEGA is a trademark of OMEGA ENGINEERING, INC.

Where Do I Find Everything I Need for Process Measurement and Control? OMEGA…Of Course!

Shop online at omega.com

TEMPERATURE

- Thermocouple, RTD & Thermistor Probes, Connectors, Panels & Assemblies
- Wire: Thermocouple, RTD & Thermistor
- Calibrators & Ice Point References
- Recorders, Controllers & Process Monitors
- Infrared Pyrometers

PRESSURE, STRAIN AND FORCE

- Transducers & Strain Gages
- Load Cells & Pressure Gages
- Displacement Transducers
- Instrumentation & Accessories

FLOW/LEVEL

- Rotameters, Gas Mass Flowmeters & Flow Computers
- Air Velocity Indicators
- Turbine/Paddlewheel Systems
- Totalizers & Batch Controllers

pH/CONDUCTIVITY

- pH Electrodes, Testers & Accessories
- Benchtop/Laboratory Meters
- Controllers, Calibrators, Simulators & Pumps
- Industrial pH & Conductivity Equipment

DATA ACQUISITION

- Communications-Based Acquisition Systems
- Data Logging Systems
- Wireless Sensors, Transmitters, & Receivers
- Signal Conditioners
- Data Acquisition Software

HEATERS

- Heating Cable
- Cartridge & Strip Heaters
- Immersion & Band Heaters
- Flexible Heaters
- Laboratory Heaters

ENVIRONMENTAL MONITORING AND

- Metering & Control Instrumentation
- Refractometers
- Pumps & Tubing
- Air, Soil & Water Monitors
- Industrial Water & Wastewater Treatment
- pH, Conductivity & Dissolved Oxygen Instruments