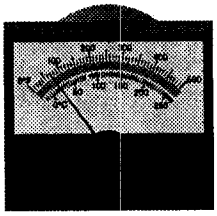
OMEGA®
An OMEGA Technologies Company

7000 Series
Analog Pyrometers
Operator's Manual: M0054/0586



THERMOCOUPLE SELECTION AND CALIBRATION

Each OMEGA® Series 7000 analog pyrometer is marked on the faceplate with the type of thermocouple and the total external resistance for which it is calibrated. Use of any other type of thermocouple, or one with a higher resistance than marked will result in incorrect readings. A complete selection of thermocouples and thermocouple wire is available from the latest copy of the OMEGA Temperature Measurement Handbook and Encyclopedia®.

All standard pyrometers are calibrated for ten ohms external thermocouple resistance and are provided with a ten ohm calibrating resistor bobbin. (See Figure 1). Nonstandard pyrometers are usually calibrated for the specific external resistance ordered and no resistor bobbin is supplied. This resistor bobbin must be adjusted so that the total resistance of the thermocouple and the bobbin add up to ten ohms in order to maintain calibration accuracy. Therefore, for a five-foot, 20-gage, Iron-Constantan thermocouple, the resistance of the thermocouple would be approximately 1.75 ohms and this resistance must be subtracted from the calibrating bobbin. For greater accuracy, make a resistance measurement for each thermocouple used. Do not use standard tables. Each turn of the wire on the resistor bobbin represents 0.5 ohms and for this example, 3½ turns would be removed. The total resistance of the thermocouple plus the resistor bobbin would then add up to ten ohms. For other values of thermocouple resistance, simply remove more or less turns to adjust for the total value of external resistance marked on the pyrometer dial. Extra ten ohm resistor bobbins may be ordered.

For best accuracy, the external thermocouple resistance should be adjusted to within one percent of the resistance of the measuring circuit (internal resistance plus external resistance). For scale spans of 500 degrees or more, adjustment accuracy should be better than ±0.5 ohms. For scale spans of 300 degrees, adjustment accuracy should be better than ±0.25 ohms.

It is very important that the resistor wire be properly soldered after adjusting.

NOTE

When thermocouples with external resistance higher than ten ohms are used, a special pyrometer is required. The use of other than thermocouple wire for leads or extensions may result in improper ambient compensation.

ZERO SETTING

Pyrometers with automatic cold-junction compensation have a small coiled bimetallic spring which moves the zero setting of the pointer to agree with the internal temperature of the meter. It may need adjustment from time to time. This is done by turning the zero adjustment screw on the front of the pyrometer. Make this adjustment only after the pyrometer has been in a room with even temperature for several hours. Disconnect the thermocouple leads and adjust the pointer to read actual room temperature. Reconnect the thermocouple leads.

ALL THERMOCOUPLE CONNECTIONS MUST BE TIGHT. A LOOSE CONNECTION OR BAD THERMOCOUPLE JUNCTION WILL CAUSE ERRATIC READINGS.

CONNECTION OF THERMOCOUPLE

Pyrometers are polarity sensitive and must have the thermocouple connected to the proper terminals to indicate properly. On all OMEGA pyrometers, the left terminal (viewed from the rear) is positive. See Figure 1 for further clarification.

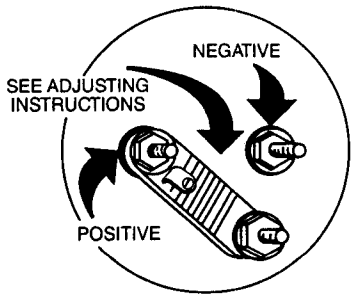
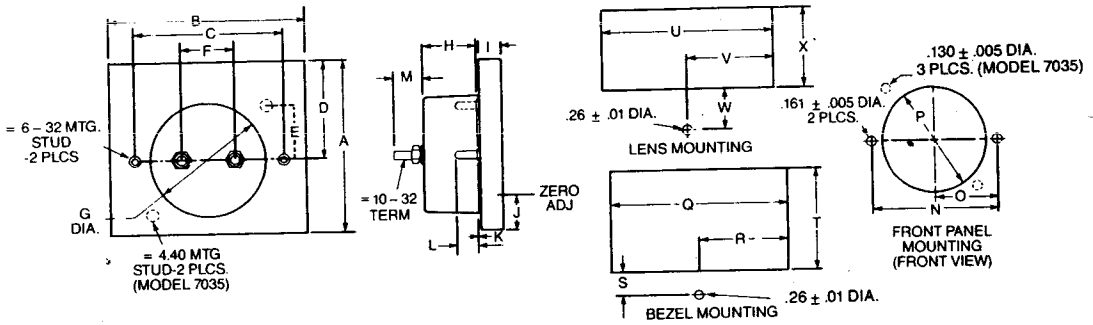


Figure 1. Series 7000 Pyrometer Rear View

DIMENSIONS:



MODEL	A	B	C	D	E	F	G	H	I	J	K	L
7035	3.01 MAX.	3.51 MAX.	— —	1.53 MAX.	1.125 ±0.01	1.25 ±0.01	2.79 MAX.	1.37 MAX.	0.58 MAX.	0.53 ±0.02	0.02 MAX.	0.56 ±0.01
7045	4.05 MAX.	4.61 MAX.	3.50 ±0.01	2.29 ±0.02	— —	1.25 ±0.01	2.79 MAX.	1.37 MAX.	0.58 MAX.	0.77 +0.02	0.02 MAX.	0.56 +0.01
7055	4.53 MAX.	5.66 MAX.	4.50 ±0.01	2.695 ±0.02	— —	1.25 ±0.01	2.79 MAX.	1.37 MAX.	0.58 MAX.	0.845 ±0.02	0.02 MAX.	0.56 ±0.01

MODEL	M	N	O	P	Q	R	S	T	U	V	W	X
7035	0.675 MAX.	— —	1.125 ±0.010	2.810 ±0.015	3.718 +0.030 −0.000	1.859 +0.015 −0.000	0.44 ±0.01	2.156 +0.030 −0.000	3.105 ±0.015	1.552 ±0.008	0.76 ±0.01	1.515 ±0.015
7045	0.675 MAX.	3.50 ±0.01	1.750 ±0.005	2.810 ±0.015	4.812 +0.030 −0.000	2.406 +0.015 −0.000	0.63 ±0.01	2.75 +0.030 −0.000	4.205 ±0.015	2.102 ±0.008	0.95 ±0.01	2.125 ±0.015
7055	0.675 MAX.	4.50 ±0.01	2.250 ±0.005	2.810 ±0.015	5.875 +0.030 −0.000	2.937 +0.015 −0.000	0.64 ±0.01	3.156 +0.030 −0.000	5.240 ±0.015	2.620 ±0.008	0.98 ±0.01	2.500 ±0.015

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WARRANTY/DISCLAIMER

OMEGA warrants this unit to be free of defects in materials and workmanship and to give satisfactory service for a period of **13 months** from date of purchase. OMEGA 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 should malfunction, 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. Upon examination by OMEGA, if the unit is found to be defective it will be repaired or replaced at no charge. However, this warranty is VOID, if the unit shows evidence of having been tampered with or shows evidence of being 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 which wear or which are damaged by misuse are not warranted. These include contact points, fuses, and triacs.

OMEGA is pleased to offer suggestions on the use of its various products. Nevertheless, OMEGA only warrants that the parts manufactured by it 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.

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 relative to the product.

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

1. P.O. number to cover the COST of the repair/calibration,
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.

It is the policy of OMEGA 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.