

## MGO Thermocouples

Thermo Sensors MGO thermocouple insulation materials feature Cerampak. These MGO thermocouples are recommended where the thermocouple is immersed in liquids, high moisture, corrosive gases, or high pressures.

Cerampak is a densely compacted ceramic which is very versatile. This weldable and flexible material can withstand temperatures from cryogenic to 2300°F as well as pressures from vacuum to 60,000 psi.

A wide variety of design, sheath material and diameter selections are available to suit application conditions. A variety of heads, connectors or flexible leads can be specified for the termination.



**Please refer to our order guide to assist in determining your needs. We can also provide technical design assistance and application suggestions. Give us a call.**

### Introduction to MGO Thermocouples

Cerampak is a densely compacted ceramic insulated metal sheathed thermocouple material manufactured to exacting standards to assure unquestioned quality. These standards coupled with the latest fabrication techniques and equipment assure the customer of thermocouples of the highest quality. The versatility of this material is virtually unlimited - temperatures from cryogenic to 2300° F - pressures from vacuum to 60,000 psi.

The sheath wall thickness, diameter and installation directly determines the time response of the sensor. Proper selection of sheath material to withstand the temperature and other process governmental perimeters is imperative to provide maximum life of the sensor.

Cerampak is weldable, flexible - can be bent on a radius 2 times its diameter - and moisture free when fabricated.






Selection of various order code options from the tables on this and the following pages enables the customer to custom build a Cerampak assembly to satisfy his individual requirement.

Personnel to provide technical design assistance and application suggestions are available.

\*Other materials for higher temperatures in special atmospheres are available.



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	Welding Pad* Horizontal Ungrounded	UP
	Welding Pad* Ungrounded and isolated (Dual T/C only)	UIP
	Welding Pad* Vertical Grounded	VP
	Welding Pad* Vertical Ungrounded	VU
	Welding Pad* Vertical Ungrounded and Isolated (Dual T/C only)	UVI

\* 1" x 1" x 1/8" pad furnished. Stainless steel hold-down clips to secure the pad thermocouple horizontally to the process tube are available. (Fits 3/16" & 1/4" O.D. Sensor). Specify Part Number 101-4.

**Table 3**

Sensor Length	
Refer to your selection of a Cold Junction Termination from <a href="#">Table 4</a> and specify required Length ("L").	
Order Code:	Specify "L" in Inches and Decimal Increments

**Table 4**


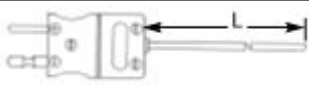
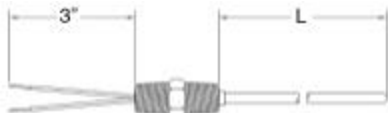
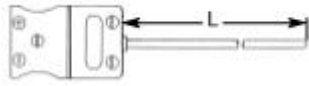
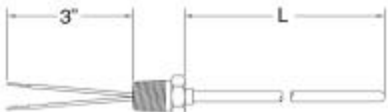
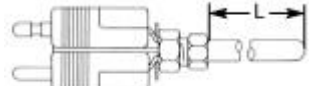

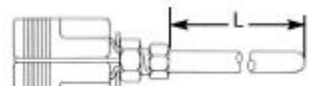

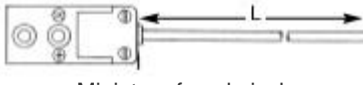
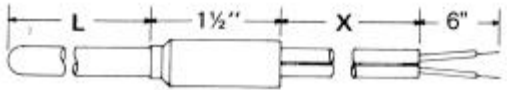
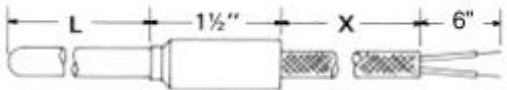
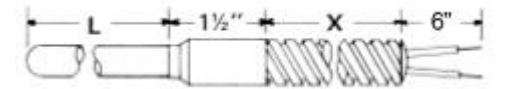
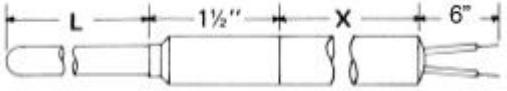
Connectors / Fittings	Order Code	Connectors	Order Code
 <p>*For longer lengths; replace "3" with desired length.</p>	B3*	 <p>Standard male plug.</p>	M (400 F) HM (800 F)
 <p>1/2" npt x 1/2" npt SS Double threaded bushing brazed to the sheath.</p>	SB	 <p>Standard female jack.</p>	F (400 F) HF (800 F)
 <p>1/2" NPT SS threaded bushing brazed to sheath.</p>	FS4	 <p>Dual male plug.</p>	DM (400 F) HDM (800 F)
 <p>1/2" NPT x 1/2" NPT SS Double threaded bushing spring-loaded to sheath</p>	SBS	 <p>Dual female jack.</p>	DF (400 F) HDF (800 F)
		 <p>Miniature male plug. (for sheath diameters 1/8" maximum)</p>	TM (400 F) HTM (800 F)
		 <p>Miniature female jack. (for sheath diameter 1/8" maximum)</p>	TF (400 F) HTF (800 F)

Table 4 continued

Extended Leads / Lead Terminations		Order Code
 <p>20 AWG Wire Extension**</p>	Fiberglass Insulation	TG(X)*
	Polyvinyl Insulation	TP(X)*
	Teflon Insulation	TT(X)*
	Kapton Insulation	TK(X)*
	Polyvinyl Insulation, Twisted, Alum-Mylar Sheilded w/ Drainwire Grounded to the sheath.	TPZD(X)*
 <p>20 AWG Wire Extension Inside Stainless Steel Overbraid**</p>	Fiberglass Insulation	TGS(X)*
	Polyvinyl Insulation	TPS(X)*
	Teflon Insulation	TTS(X)*
	Kapton Insulation	TKS(X)*
 <p>20 AWG Wire Extension inside stainless steel flexible tubing armor.**</p>	Fiberglass Insulation	TGA(X)*
	Polyvinyl Insulation	TPA(X)*
	Teflon Insulation	TTA(X)*
	Kapton Insulation	TKA(X)*
 <p>20 AWG Wire Extension inside polyvinyl covered stainless steel flexible tubing armor.**</p>	Fiberglass Insulation	TGP(X)*
	Polyvinyl Insulation	TPP(X)*
	Teflon Insulation	TTP(X)*
	Kapton Insulation	TKP(X)*

\* Replace (X) with desired length in inches.

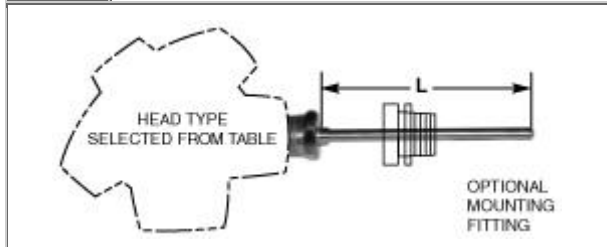
\*\* Standard conductors are solid. For stranded conductors - Specify by placing "F" in the order code before length. Example: TG36F. (Not available for "TPZD" option).

\*\*\* "DRIP loop" style T/C's are available in armored lead options. Choose head option in the hardware section and add head order code as a suffix to the complete part number.

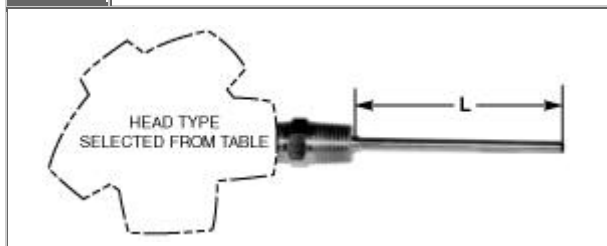
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**Table 4 continued**  
**Terminal Heads**

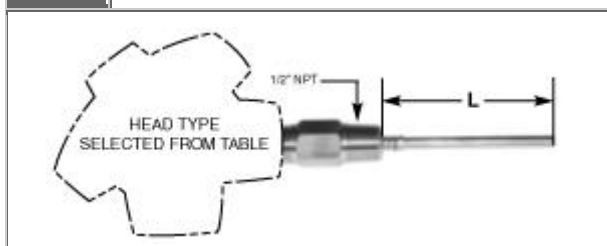
**Figure 1** T/C Assembly Without Process Fitting



**Figure 2** T/C Assembly w/ 1/2" NPT Process Fitting



**Figure 3** T/C Assembly w/ 1/2" NPT Spring Loaded Fitting





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**Table 4 continued**

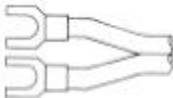

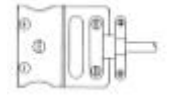
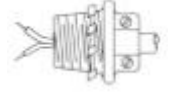
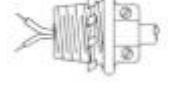
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Table 5

Stainless Steel Adjustable Mounting Fittings			
Compression Type (One time adjustable)		Compression Type (Readjustable)	
 npt Metal Collets		 npt Teflon Collets	
Mounting NPT	Order Code	Mounting NPT	Order Code
1/8" NPT	1AS	1/8" NPT	1RS
1/4" NPT	2AS	1/4" NPT	2RS
3/8" NPT	3AS	3/8" NPT	3RS
1/2" NPT	4AS	1/2" NPT	4RS
*3/4" NPT	6AS	*3/4" NPT	6RS



\*3/4" npt compression type fittings are supplied as smaller npt fittings bushed to 3/4" npt.

Note: Fittings furnished may not have the same physical appearance as illustrated above, but will be functionally equal.

Extended Leads / Lead Terminations		Order Code
	Spade lugs for No. 8 screw.	L
	Male plug.	M (400 F) HM (800 F)
	Female jack.	F (400 F) HF (800 F)
	1/2" npt "BX" connector (not watertight).	BX
	Water tight connector for conduit installation. (Neopren sealant).	1/2" npt W1
		3/4" npt W3



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Miscellaneous Options		
<p><b>A) Bends:</b>            To specify a 90 bend along the "L" length;            Add "- 90 B (Length from Tip)            Example: 90 B8 for a 90° bend 8" from tip.</p>		
<p><b>B) High Temp Potting:</b>            To specify a higher temperature than the 300° F. rated material in the transition,            Add the following suffix:            For 400° F Epoxy: -EII            For 1000° F Cement: -HTC</p>		
C) Adjustable spring "FP-275"	<b>Order Code</b>	FP 275
		
D) Adjustable spring loaded fitting	<b>Order Code</b>	SSL
		
E) Adjustable spring-loaded fitting	<b>Order Code</b>	FP 240
