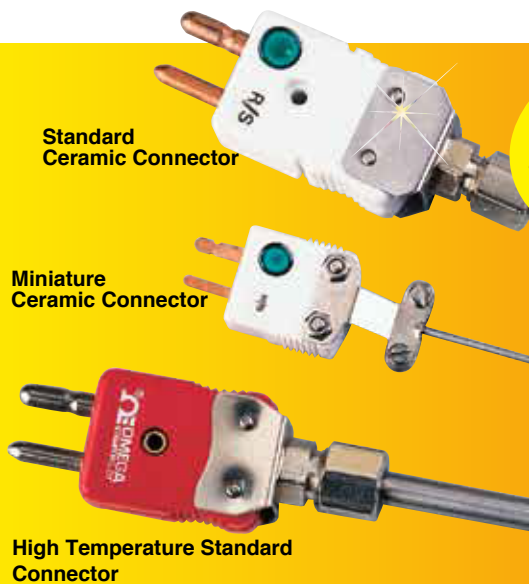


Exotic Thermocouple Probes

For Measuring
Temperatures up to
2315°C
(4200°F)

Refractory metals are extremely sensitive to any trace of oxygen above approximately 260°C (500°F). Must be used in vacuum or in very pure inert gases such as Helium or Argon.



Images are for reference only.

Omega™ Exotic Thermocouple Probes are designed to be used in extreme temperatures up to 2315°C (4200°F). These probes utilize either Platinum/Rhodium (TYPE R, S, or B) or Tungsten/Rhenium (TYPE C or D) elements and a variety of insulations/sheath materials. Depending on the sheath material selected, probes can be used in inert, oxidizing, reducing or vacuum conditions. The maximum temperature of the final assembly is based on the lowest maximum temperature of the element, insulation and sheath material.

Cold end probe terminations are available in: replacement probe (RP), standard or subminiature ceramic connector, standard or subminiature heavy-duty nylon connector, or transition joint with 2 m (72") braided fiberglass lead wire. Other options available on page 3/4 or contact sales.

Note:

1. For Type C and D, ANSI color codes are used as there is no IEC standard.
2. Images throughout spec sheet are for reference only.
3. Non-Metallic sheaths are available. Please see PTRA and PTRM ceramic thermocouple protection tubes at Omega.

Part number Breakdown / Example

XMO - **W5R26** - **U** - **125** - **30** - **A** - **Q** - **12** - **Dual**
1 **2** **3** **4** **5** **6** **7** **8** **9**

1. All probes are ungrounded.
2. Some probes available in dual configurations. Please see page #2 and/or check with sales.
3. Specify Termination Style: Q, HX, MQ, SX, TJ, TJ-BX, TJ-SB, RP, NB, NB-LK. *Cold End Termination temperature ratings found on page 3.
4. Specify Probe Length in Inches (1" = 24.5mm).
5. Material/wire calibration certificate available upon request for \$50 upcharge. Please add "-CERT" to end of part number.

1. Sheath Material: Molybdenum
2. Calibration: W5% Re vs. W-26% Re
3. Measuring Junction: Ungrounded
4. Sheath Diameter: 0.125"
5. Thermocouple Wire Gage: 30 AWG
6. Insulation: Alumina, Al₂O₃
7. Termination: HSTW
8. Length: 12"
9. Dual Sensing

(1) Sheath Materials

Code	Material	Max Operating Temp	Work Environment	Approx. Melting Point	Lengths	Available Diameter (s) Single Sensing Point	Available Diameter (s) DUAL Sensing Point	Rigid/Bendable	Remarks
XTA	Tantalum	2315°C	Vacuum	3000°C	1"-72"	0.062", 0.125", 0.187", 0.250"	0.125", 0.187", 0.250"	Rigid	Resists many acids and weak Alkalies. Very sensitive to oxidation above 300°C (570°F).
		4200°F		5430°F					
XMO	Molybdenum	2200°C	Inert, Vacuum, Reducing	2610°C	1"-72"	0.062", 0.125", 0.187", 0.250"	0.125", 0.187", 0.250"	Rigid	Sensitive to oxidation above 204C (400F).
		4000°F		4730°F					
XPA	Platinum-Rhodium Alloy	1650°C	Oxidizing, Inert	1870°C	1"-72"	0.062", 0.125"	N/A	Bendable	No attack by SO ₂ at 1093C (2000F). Silica is detrimental. Halogens attach at high temps.
		3000°F		3400°F					
XIN	Inconel 600	1150°C	Oxidizing, Inert, Vacuum	1400°C	1"-72"	0.062", 0.125", 0.187", 0.250"	0.125", 0.187", 0.250"	Rigid	Excellent resistance to oxidation at high temp. Hydrogen tends to embrittle. Very sensitive to Sulfur Corrosion.
		2100°F		2550°F					

XMO/XTA/XIN: MAX LENGTH on 0.062" dia probes is 42"

XMO/XTA/XIN: LENGTH TOLERANCE +/- 1/4"

(2) Calibration (Wires)

Code	Calibration	+ Material	- Material	Wire Gauge (AWG)	Max Temp	
P10R	S	Pt - 10% Rh	Pt	ALL GAUGES	1482°C 2700°F	
P13R	R	Pt - 13% Rh	Pt	ALL GAUGES	1482°C 2700°F	
P30R	B	Pt - 30% Rh	Pt - 6% Rh	ALL GAUGES	1704°C 2700°F	
W3R25	D	W - 3% Re	W - 25% Re	40	1871°C 3400°F	
					36	1982°C 3600°F
					32	2093°C 3800°F
					30	2315°C 4200°F
					24	2315°C 4200°F
					40	1871°C 3400°F
W5R26	C	W - 5% Re	W - 26% Re	36	1982°C 3600°F	
					32	2093°C 3800°F
					30	2315°C 4200°F
					24	2315°C 4200°F
					36	1982°C 3600°F
					32	2093°C 3800°F

(6) Insulation Materials

Code	Material	Max Operating Temp**	Approx Melting Point	Remarks
H	Hafnia (HfO ₂)	2500°C 4530°F	2830°C 5125°F	Nontoxic substitute for BeO High Thermal Conductivity
M	Magnesia (MgO)	1650°C 3000°F	2790°C 5050°F	Hygroscopic Compacts Well
A	Alumina (Al ₂ O ₃)	1540°C 2800°F	2010°C 3650°F	Requires Considerable Volume Reduction to Compact Satisfactorily

Note: For temperatures above 1000°C (1800°F), all insulating materials experience a substantial decrease in resistivity with increasing temperatures.

* including graphite. Molybdenum and Tantalum sheathed probes are not recommended in applications where they will be exposed to carbon, including graphite.

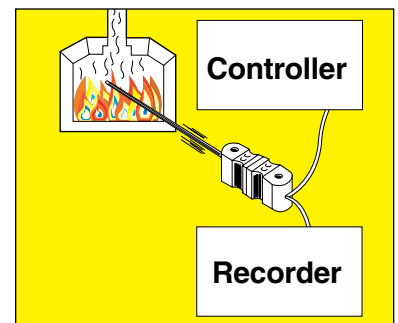
* Values given are for compacted insulation. For uncompacted hard-fired insulators, useful temperature range can be 50° to 100°C (100 to 200°F) higher.

(9) Dual Element Assemblies

- ✓ Two Sensor Readings—
Built-In Backup
- ✓ Allows Two Readings of a Single Point



Performs two functions with ONE dual element probe!



Sheaths†

- ✓ Tantalum (XTA)
- ✓ Molybdenum (XMO)
- ✓ Inconel 600 (XIN)

Wire / Calibration

- ✓ Hafnium Oxide (HfO₂)
- ✓ Alumina (Al₂O₃)

XMO - W5R26 - U - 125 - 30 - A - Q - 12 - Dual
1 - 2 - 3 - 4 - 5 - 6 - 7 - 8 - 9

(7) Termination Options

Standard Connector - Style Q



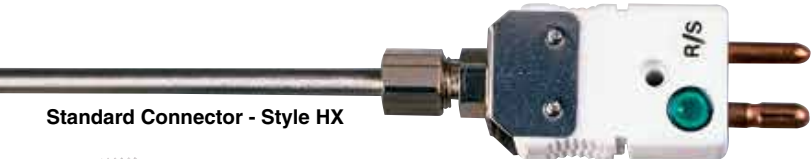
Termination Style Q

Type HSTW Standard Color Coded Male Connector. Mating Connector and Cable Clamp Sold Separately. Add additional cost to the base price.

*Only available on 0.062", 0.125", 0.187", 0.250".

** Temperature Rating to 200°C. B Calibration (P30R) rated to 100°C.

Standard Connector - Style HX



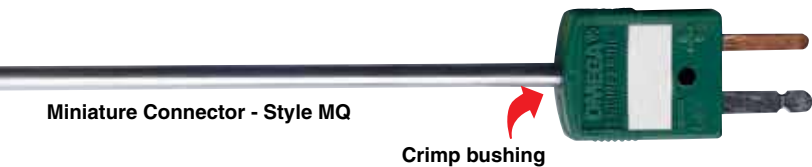
Termination Style HX

Type NHX high temperature ceramic male connector with color identification. Mating Connector and Cable Clamp Sold Separately. Add additional cost to base price.

*Only available on 0.062", 0.125", 0.187", 0.250".

** Temperature Rating to 200°C. B Calibration (P30R) rated to 100°C.

Miniature Connector - Style MQ



Crimp bushing

Termination Style MQ

Type HMPW miniature Color Coded Male Connector. Mating Connector and Cable Clamp Sold Separately. Add additional cost to the base price.

*Only available on 0.062", 0.125".

** Temperature Rating to 200°C. B Calibration (P30R) rated to 100°C.

Miniature Connector - Style SX



Termination Style SX

Type SX high temperature ceramic male miniature connector with color identification. Mating Miniature Connector and Cable Clamp Sold Separately. Add additional cost to base price.

*Only available on 0.062", 0.125".

** Temperature Rating to 200°C. B Calibration (P30R) rated to 100°C.

Transition Joint - Style TJ



Termination Style TJ

Heavy-duty transition termination with 2 m (72") braided fiberglass insulated lead wire. Available as an option with PFA lead wire—add suffix "-T". Add additional cost to the base price.

*Only available on 0.062", 0.125", 0.187", 0.250".

** Temperature Rating to 200°C. B Calibration (P30R) rated to 100°C.

Transition Joint - Style TJ-BX



Termination Style TJ-BX

Heavy-duty transition termination with 2 m (72") stainless steel BX armored cable. The armoring adds durability and abrasion protection. Add additional cost to the base price.

Transition Joint - Style TJ-SB



Termination Style TJ-SB

Heavy-duty transition termination with 2 m (72") stainless steel braid cable. The over braiding adds durability and abrasion protection. Add additional cost to the base price.

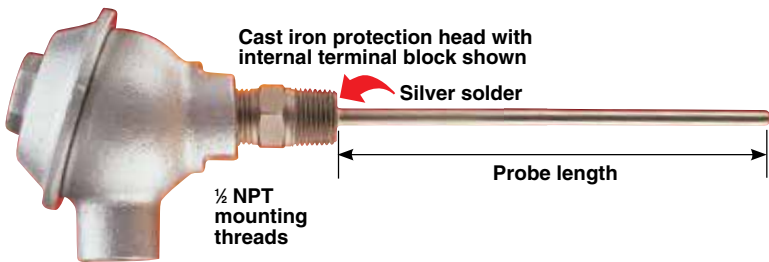
RP Style Termination



Termination Style RP

Replacement probe style with 25 mm (1") bare wire leads. No additional price.

(7) Termination Options (cont.)



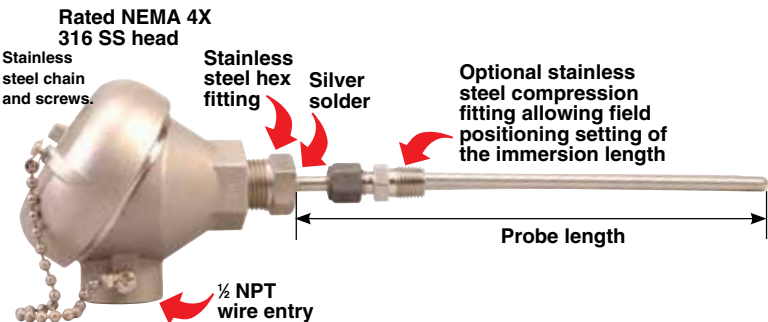
Termination Style NB1/NB12

Termination Style NB1/NB12

Industrial protection heads suitable for demanding environments; such as heavy industrial and process applications. Different head styles are available to meet application requirements. Visit Omega for complete specifications or consult our technical quotation department. Add additional cost to the base price for NB1/NB12 style heads. Add additional cost to the base price for NEMA 4X rated head, specify "NB15". Add additional cost to the base price for explosion resistant rated head, specify "NEPB" or "NEPA".

*Only available on 0.062", 0.125", 0.187", 0.250".

** Temperature Rating to 230°C.



Termination Style NB1-LK/NB12-LK

Termination Style NB1-LK/NB12-LK

Industrial protection heads with optional stainless steel compression fitting for application requiring fast mounting and level adjustment of probe.

Add additional cost to the base price for NB1/NB12 style heads, specify "NB1-LK".

Add additional cost to the base price for NEMA 4X rated head, specify "NB15-LK".

Add additional cost to the base price for explosion resistant rated head, specify.

"NEPB-LK" or "NEPA-LK".

Select appropriate size optional compression fitting. Available in different mounting threads. Small diameter probes should be handled with greater care than our larger probes.

To Order			
Protection Tube OD in	Male Th's NPT	Length mm (inch)	316 Stainless Steel Model No.
1/16	1/16	24.6 (0.97)	SSLK-116-116
1/16	1/8	26.2 (1.03)	SSLK-116-18
1/8	1/8	30.0 (1.18)	SSLK-18-18
1/8	1/4	44.2 (1.74)	SSLK-18-14
3/16	1/8	31.0 (1.22)	SSLK-316-18
3/16	1/4	46.0 (1.81)	SSLK-316-14
1/4	1/8	32.8 (1.29)	SSLK-14-18
1/4	1/4	37.6 (1.48)	SSLK-14-14

Ordering Chart

XMO - **W5R26** - **U** - **125** - **30** - **A** - **Q** - **12** - **Dual**
1 **2** **3** **4** **5** **6** **7** **8** **9**

Single Element

(1) Sheath Material	(2) Calibration	(3) Measuring Junction	(4) Sheath Diameter (in)	(5) Wire Gauge	(6) Insulation	(7) Termination	(8) Length	(9) Dual	RESTRICTIONS
XTA/XMO/ XIN	P10R,P13R,P30R, W3R25,W5R26	U	062 (0.062")	32,36,40	H	See pg. 2	See pg. 1	N/A	
			125 (0.125")	30,36					
			187 (0.187")	24,30					
			250 (0.250")	24,30					
XTA/XMO/ XIN	P10R,P13R,P30R, W3R25,W5R26	U	062 (0.062")	40	A	See pg. 2	See pg. 1	N/A	
			125 (0.125")	30,36					
			187 (0.187")	24,30					
			250 (0.250")	24,30					
XTA/XMO/ XIN	P10R,P13R,P30R, W3R25,W5R26	U	062 (0.062")	n/a	M	See pg. 2	See pg. 1	N/A	
			125 (0.125")	24,30					
			187 (0.187")	24,30					
			250 (0.250")	24,30					250 not available for XMO AND XIN
XPA	P10R,P13R,P30R	U	062 (0.062")	30	M	See pg. 2	See pg. 1	N/A	
			125 (0.125")	24					

DUAL Element

XTA/XMO/ XIN	P10R,P13R,P30R, W3R25,W5R26	U	125 (0.125")	32,36,40	H	See pg. 2	See pg. 1	DUAL	125 not available for XMO
			187 (0.187")	24,30					187 not available for XIN
			250 (0.250")	24,30					
XTA/XMO/ XIN	P10R,P13R,P30R, W3R25,W5R26	U	125 (0.125")	30,36	A	See pg. 2	See pg. 1	DUAL	
			187 (0.187")	24,30					187 not available for XMO AND XIN
			250 (0.250")	24,30					

NOTE:

1. TERMINATIONS: RP,RP(*), Q, HX, MQ, SX, TJ-T, TJ-SB, TJ-BX, NB HEADS (See page. 3/4).