XTA-W5R26 Series

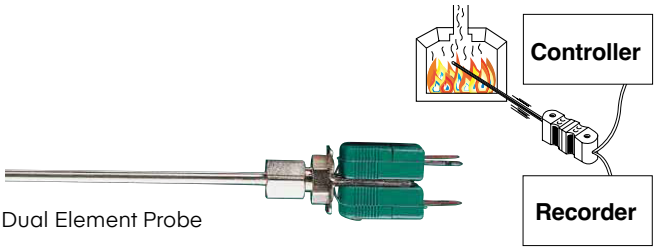
Extreme Temperature Exotic Thermocouple Probes

Description

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.
- All probes are ungrounded.
- 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.
- Probes can be Tungsten-coated if needed for greater robustness or in environments where there is oxygen or carbon exposure - contact Sales for more info.
- For Type C and D, only ANSI color codes are used (no IEC standards)
- Material/wire calibration certificate available upon request - contact Sales for pricing

- Dual Element assemblies available for two sensor readings to use as built in backup or sending signal to different instruments.



Dual Element Probe

Ordering Guide

Part Number Breakdown / Example

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

(1)* Sheath Material Code	(2)* Calibration Code	(3) Junction	(4) Sheath Diameter	(5) Wire Gauge Options		(6)* Insulation Code	(7) Termination Style	(8) Length	(9) Single or Dual Element
				Single Element	Dual Element				
XTA XMO XIN	P10R[2], P13R[2], P30R[2], W3R25, W5R26	U (ungrounded)	062 (1/16 ")	40, 36, 32	-	H	See Page 3	1 " to 48 " (in 0.5 " increments)	N/A
				40	-	A			
				40, 36, 32	-	M			
XTA XMO XIN	P10R[2], P13R[2], P30R[2], W3R25, W5R26	U (ungrounded)	125 (1/8 ")	36, 32, 30	36, 32	H	See Page 3	1 " to 48 " (in 0.5 " increments)	Single Element: <Blank> Dual Element: -DUAL
				36, 32, 30	36, 32	A			
				32, 30	-	M			
XTA XMO XIN	P10R[2], P13R[2], P30R[2], W3R25, W5R26	U (ungrounded)	187 (3/16 ")	30, 24	32, 30	H	See Page 3	1 " to 48 " (in 0.5 " increments)	Single Element: <Blank> Dual Element: -DUAL
				30, 24	32, 30	A			
				30, 24	-	M			
XTA XMO XIN	P10R[2], P13R[2], P30R[2], W3R25, W5R26	U (ungrounded)	250 (1/4 ")	30, 24	30, 24	H	See Page 3	1 " to 48 " (in 0.5 " increments)	Single Element: <Blank> Dual Element: -DUAL
				30, 24	30, 24	A			
				30, 24	-	M			
XPA[1]	P10R, P13R, P30R	U (ungrounded)	062 (1/16 ")	30	-	M	See Page 3	1 " to 100 " (in 0.5 " increments)	N/A
			125 (1/8 ")	24	-	M			

*See tables on following page for descriptions and specs.
[1]MI-Cable Probes, Bendable
[2]Platinum thermocouple elements in XTA/XMO/XIN sheaths can be subject to higher rates of internal degradation above 600 °C

(1) Sheath Materials

Code	Material	Max Operating Temperature	Work Environment	Approx. Melting Point	Rigid/ Bendable	Remarks
XTA	Tantalum	2315 °C 4200 °F	Vacuum	3000 °C 5430 °F	Rigid	Resists many acids and weak Alkalies. Very sensitive to oxidation above 300 °C (570 °F)
XMO	Molybdenum	2200 °C 4000 °F	Inert, Vacuum, Reducing	2610 °C 4730 °F	Rigid	Sensitive to oxidation above 204 °C (400 °F)
XPA	Platinum-Rhodium Alloy	1650 °C 3000 °F	Oxidizing, Inert	1870 °C 3400 °F	Bendable	No attack by SO2 at 1093 °C (2000 °F). Silica is detrimental. Halogens attach at high temps.
XIN	Inconel 600	1150 °C 2100 °F	Oxidizing, Inert, Vacuum	1400 °C 2550 °F	Rigid	Excellent resistance to oxidation at high temp. Hydrogen tends to embrittle. Very sensitive to Sulfur Corrosion.

(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)
W5R26	C	W - 5 % R	W - 26 % 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)

(6) Insulation Materials

Code	Material	Max Operating Temp**	Approx Melting Point	Remarks
H	Hafnia (HfO2)	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_2O_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. Molybdenum and Tantalum sheathed probes are not recommended in applications where they will be exposed to carbon,including graphite.

(7) Termination Options

Standard Connector - Style Q

Termination Style Q

Type HSTW Standard Color Coded Male Connector.

Not available in Type D

**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.

Not available in Type D

** 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.

Not available in Type D

*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".

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

RP Style Termination

Termination Style RP

Replacement probe style with 25 mm (1 ") bare wire leads.

Miniature Connector - Style MQ

Crimp bushing

Termination Style MQ

Type HMPW miniature Color Coded Male Connector.

Not available in Type D

*Only available on 0.062 ", 0.125 ".

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

Transition Joint - Style TJ-BX

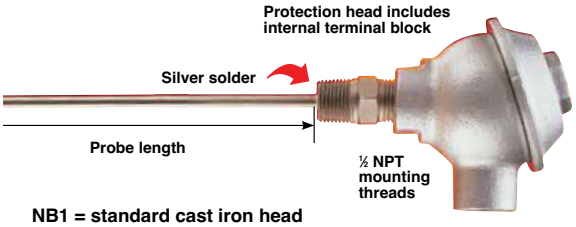
Termination Style TJ-BX

Heavy-duty transition termination with 2 m (72 ") stainless steel BX armored cable. The armoring adds durability and abrasion protection.

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.



NB1 = standard cast iron head
NB2 = low profile aluminum head

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.

Note:

1. Images throughout spec sheet are for reference only.
2. Non-Metallic sheaths are available. Please see PTRA and PTRM ceramic thermocouple protection tubes at Omega.

Optional Compression Fittings for Fast Mounting and Positioning of Exotic Probes

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