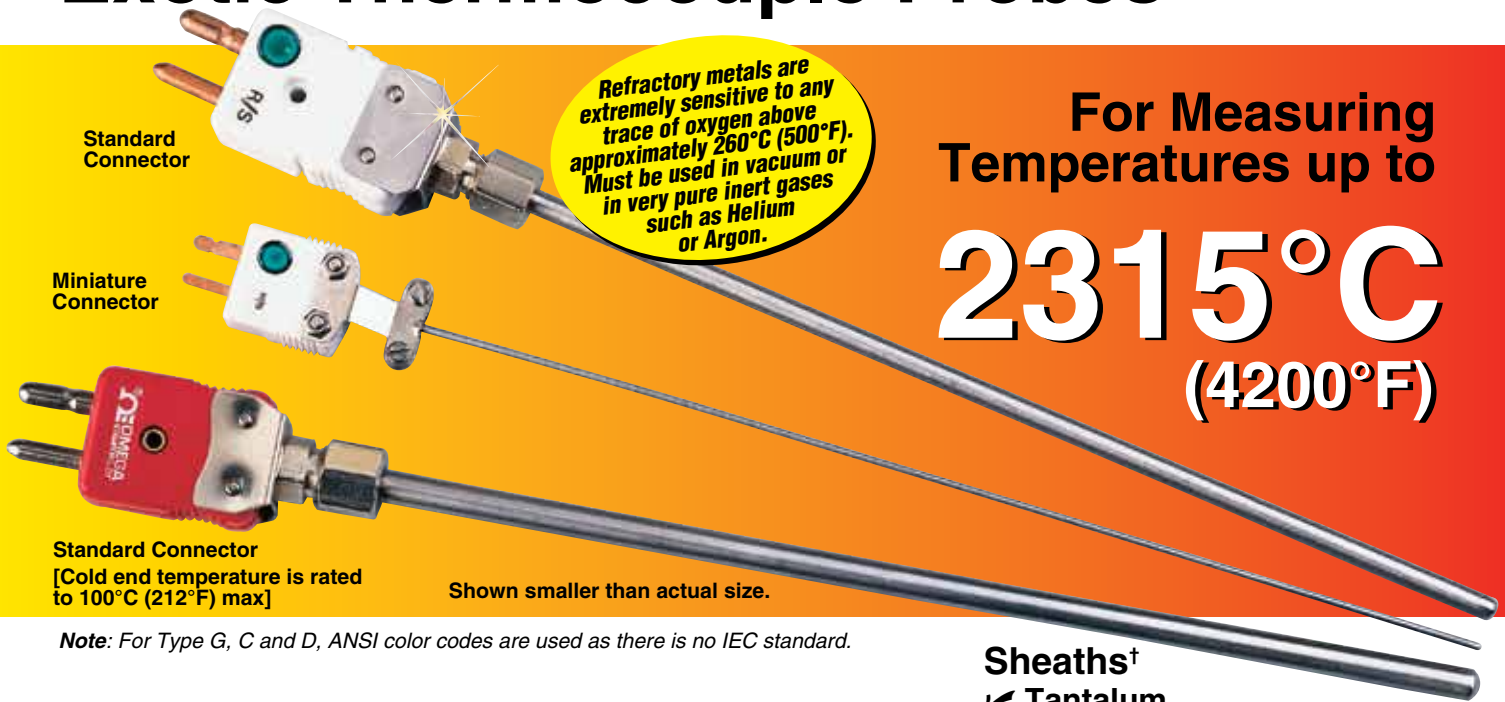


Exotic Thermocouple Probes



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

Standard Connector
[Cold end temperature is rated to 100°C (212°F) max]

Shown smaller than actual size.

Note: For Type G, C and D, ANSI color codes are used as there is no IEC standard.

Sheaths†

- ✓ Tantalum
- ✓ Molybdenum
- ✓ Platinum/Rhodium
- ✓ Inconel 600

Thermocouple Elements

- ✓ Tungsten/Rhenium
- ✓ Platinum/Rhodium

Insulations

- ✓ Hafnia Oxide (HfO₂)
- ✓ Magnesia (MgO)
- ✓ Alumina (Al₂O₃)

OMEGA® Exotic Thermocouple Probes are designed for use in extreme temperatures, up to 2315°C (4200°F). These probes utilize either Platinum/Rhodium (types R, S, or B) or Tungsten/Rhenium (types G, C, or D) elements, with a variety of insulations and sheath materials. Depending upon the sheath material selected, these probes may be used in inert, oxidizing, reducing or vacuum conditions. The maximum temperature is based on the lowest maximum temperature of the element, insulation and sheath material. Five cold end probe terminations are available: replacement probe, subminiature or standard size ceramic connector, heavy-duty standard size, molybdenum-sheathed nylon connector, or transition joint with 2 m (72") lead wire.

Sheath Materials

Code	Material	Max Operating Temp	Working Environment	Approx Melting Point	Remarks
XTA	Tantalum*	2315°C 4200°F	Vacuum	3000°C 5430°F	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	Sensitive to Oxidation Above 204°C (400°F) Non-Bendable
XPA	Platinum-Rhodium Alloy	1650°C 3000°F	Oxidizing Inert	1870°C 3400°F	No Attack by SO ₂ at 1093°C (2000°F). Silica Is Detrimental. Halogens Attack at High Temp
XIN	Inconel 600	1150°C 2100°F	Oxidizing Inert Vacuum	1400°C 2550°F	Excellent Resistance to Oxidation at High Temp. Hydrogen Tends to Embrittle. Very Sensitive to Sulfur Corrosion

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.

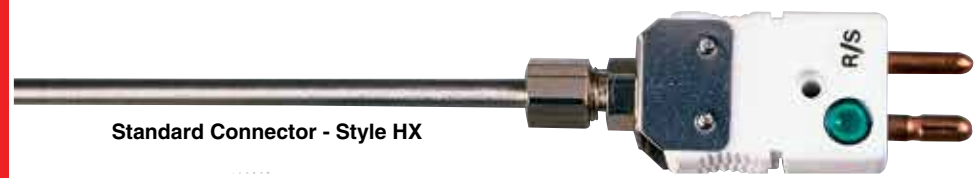
* Molybdenum and Tantalum sheathed probes are not recommended in applications where they will be exposed to carbon, including graphite.

** Values given are for compacted insulation. For uncompacted hard-fired insulators, useful temperature range can be 5 to 110°C (100 to 200°F) higher.

† Non-metallic sheaths are also available. Please see PTR A and PTR M ceramic thermocouple protection tubes at OMEGA



Standard Connector - Style Q



Standard Connector - Style HX



Miniature Connector - Style MQ

Crimp bushing



Miniature Connector - Style SX



Transition Joint - Style TJ



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.

Termination Style Q

Type HSTW solid pin construction standard connector for maximum durability and service. Color coded male and female connectors. Add additional cost to the base price.

Termination Style HX

Type NHX high temperature ceramic male and female connectors with color identification dot. Add additional cost to base price.

Termination Style MQ

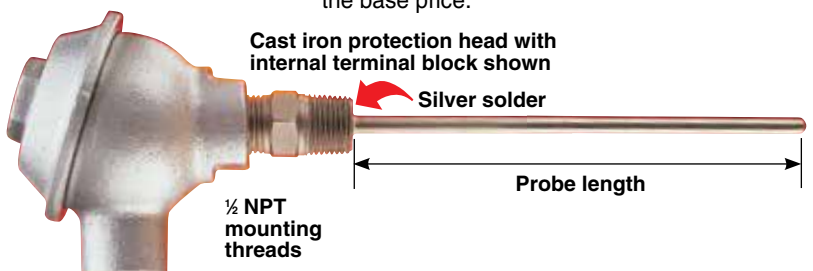
Type HMPW miniature connector, color-coded. Male and female connectors. Add additional cost to the base price.

Termination Style SX

Type SHX miniature high temperature ceramic male and female connectors with color identification dot. Add additional cost to base price.

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.



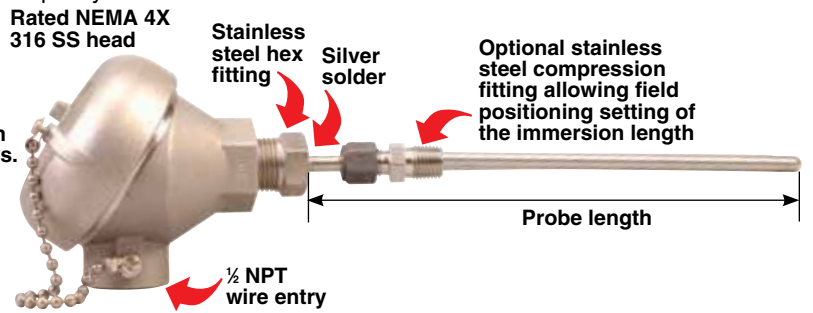
Termination Style NB1/NB12

Industrial protection heads suitable for demanding environments; such as heavy industrial and processes 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”.



Stainless steel chain and screws.

Stainless steel hex fitting

Silver solder

Optional stainless steel compression fitting allowing field positioning setting of the immersion length

1/2 NPT wire entry

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

To Order		
Calibration	Atmosphere ² Max Temp ³	Model Number
C W-5% Re vs. W-26% Re	I.V.R. 2200°C 4000°F	XMO-W5R26-U-062-36-H-*.** XMO-W5R26-U-125-30-H-*.** XMO-W5R26-U-187-30-H-*.** XMO-W5R26-U-187-24-H-*.** XMO-W5R26-U-250-30-H-*.** XMO-W5R26-U-250-24-H-*.**
C W-5% Re vs. W-26% Re	I.V.R. 1540°C 2800°F	XMO-W5R26-U-062-40-A-*.** XMO-W5R26-U-062-36-A-*.** XMO-W5R26-U-125-30-A-*.** XMO-W5R26-U-187-30-A-*.** XMO-W5R26-U-187-24-A-*.** XMO-W5R26-U-250-30-A-*.** XMO-W5R26-U-250-24-A-*.**
R† Pt-13% Rh vs. Pt	I.V.R. 1480°C 2700°F	XMO-P13R-U-062-40-A-*.** XMO-P13R-U-062-36-A-*.** XMO-P13R-U-125-30-A-*.** XMO-P13R-U-187-30-A-*.** XMO-P13R-U-187-24-A-*.** XMO-P13R-U-250-30-A-*.** XMO-P13R-U-250-24-A-*.**
C W-5% Re vs. W-26% Re	V. 2300°C 4200°F	XTA-W5R26-U-062-30-H-*.** XTA-W5R26-U-125-30-H-*.** XTA-W5R26-U-125-24-H-*.** XTA-W5R26-U-187-30-H-*.** XTA-W5R26-U-187-24-H-*.** XTA-W5R26-U-250-30-H-*.** XTA-W5R26-U-250-24-H-*.**
R† Pt-13% Rh vs. Pt	V. 1475°C 2700°F	XTA-P13R-U-062-30-M-*.** XTA-P13R-U-125-30-M-*.** XTA-P13R-U-125-24-M-*.** XTA-P13R-U-187-30-M-*.** XTA-P13R-U-187-24-M-*.** XTA-P13R-U-250-30-M-*.** XTA-P13R-U-250-24-M-*.** XTA-P13R-U-062-30-H-*.** XTA-P13R-U-125-30-H-*.** XTA-P13R-U-125-24-H-*.** XTA-P13R-U-187-30-H-*.** XTA-P13R-U-187-24-H-*.** XTA-P13R-U-250-30-H-*.** XTA-P13R-U-250-24-H-*.**
R† Pt-13% Rh vs. Pt	O.I.V. 1480°C 2700°F	XPA-P13R-U-062-30-M-*.** XPA-P13R-U-125-24-M-*.** XPA-P13R-U-125-30-A-*.**
C W-5% Re vs. W-26% Re	O.I.V. 1540°C 2800°F	XPA-W5R26-U-062-40-A-*.** XPA-W5R26-U-062-36-A-*.** XPA-W5R26-U-125-30-A-*.**
C W-5% Re vs. W-26% Re	O.I.V. 1150°C 2100°F	XIN-W5R26-U-062-30-M-*.** XIN-W5R26-U-125-30-M-*.** XIN-W5R26-U-125-24-M-*.** XIN-W5R26-U-187-30-M-*.** XIN-W5R26-U-187-24-M-*.** XIN-W5R26-U-250-30-M-*.** XIN-W5R26-U-250-24-M-*.**
R† Pt-13% Rh vs. Pt	O.I.V. 870°C 1600°F 870°C 1600°F	XIN-P13R-U-062-30-M-*.** XIN-P13R-U-125-30-M-*.** XIN-P13R-U-125-24-M-*.** XIN-P13R-U-187-24-M-*.** XIN-P13R-U-250-24-M-*.** XIN-P13R-U-250-20-M-*.**

Custom Assemblies Available,
Contact Custom Engineering.

Model Number Explanation

Ordering Example:

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

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"

* Specify Termination Style: Q, HX, MQ, SX, TJ, TJ-BX, TJ-SB, RP, NB or NB-LK
** Specify Probe Length in inches (1" = 25.4 mm)

- Note 1: Prices subject to change.**
Please consult the Sales Department for accurate pricing.
- Note 2: Atmospheres:** O-Oxidizing
I-Inert
V-Vacuum
R-Reducing
- Note 3:** Maximum service temperatures shown are for probes with the largest available gage wire leads. Consult Engineering for ratings of other dimension probes.
- Note 4:** Bending: XPA sheathed probes with platinum elements can be bent in the field.
- Note 5:** Some probes available in dual configurations. Check with Sales Department.

Tantalum sheathed probes can be bent, but this must be done at the factory. If the customer chooses to bend a probe himself, all warranties are voided.

† For type S, replace "P13R" with "P10R". For type B, replace "P13R" with "P30R". For type G, replace "W5R26" with "W0R26". For type D, replace "W5R26" with "W3R25". No additional charge.
Type D "W3R25" not available in 40 AWG (0.003"). Type B "P30R" not available in 40 AWG (0.0031") and 36 AWG (0.005"). TJ Style probes are only available for type C, R, S or B calibrations.
Wire batch certificate reports available at no charge upon request; 40 AWG and up for type C, G, and D, 36 AWG and up for type R, S and B. Add Suffix "-CERT" to model number.
* Specify termination style: Q, HX, MQ, SX, TJ, TJ-BX, TJ-SB, RP, NB or NB(*)-SSLK.
** Specify probe length in inches (1" = 25.4 mm).

Exotic Dual Element Thermocouple Assemblies

- ✓ Two Sensor Readings— Built-In Backup
- ✓ Allows Two Readings of a Single Point
- ✓ Continuous Monitor and Control
- ✓ 3.0 to 6.0 mm ($\frac{1}{8}$ to $\frac{1}{4}$ " Diameter

Sheaths†

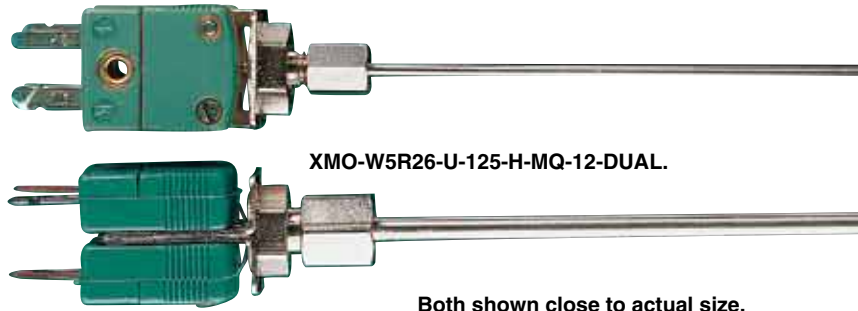
- ✓ Tantalum (XTA)
- ✓ Molybdenum (XMO)
- ✓ Inconel 600 (XIN)

Thermocouple Elements

- ✓ Tungsten/Rhenium
- ✓ Platinum/Rhodium

Insulations

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

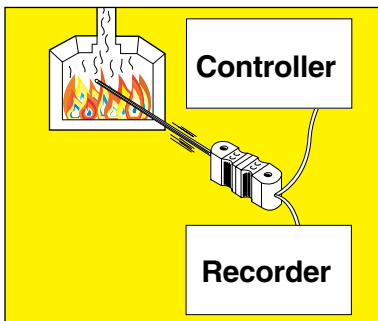


Both shown close to actual size.

To Order		
Calibration	Atmosphere ² Max Temp ³	Model Number
C W-5% Re vs. W-26% Re	I.V.R. 2200°C 4000°F	XMO-W5R26-U-125-30-H-***-DUAL
		XMO-W5R26-U-187-30-H-***-DUAL
		XMO-W5R26-U-187-24-H-***-DUAL
		XMO-W5R26-U-250-30-H-***-DUAL
		XMO-W5R26-U-250-24-H-***-DUAL
C W-5% Re vs. W-26% Re	I.V.R. 1540°C 2800°F	XMO-W5R26-U-125-30-A-***-DUAL
		XMO-W5R26-U-187-30-A-***-DUAL
		XMO-W5R26-U-187-24-A-***-DUAL
		XMO-W5R26-U-250-30-A-***-DUAL
		XMO-W5R26-U-250-24-A-***-DUAL
Rt Pt-13% Rh vs. Pt	I.V.R. 1480°C 2700°F	XMO-P13R-U-125-30-A-***-DUAL
		XMO-P13R-U-187-30-A-***-DUAL
		XMO-P13R-U-187-24-A-***-DUAL
		XMO-P13R-U-250-30-A-***-DUAL
		XMO-P13R-U-250-24-A-***-DUAL
C W-5% Re vs. W-26% Re	V. 2300°C 4200°F	XTA-W5R26-U-125-30-H-***-DUAL
		XTA-W5R26-U-187-30-H-***-DUAL
		XTA-W5R26-U-187-24-H-***-DUAL
		XTA-W5R26-U-250-30-H-***-DUAL
		XTA-W5R26-U-250-24-H-***-DUAL
C W-5% Re vs. W-26% Re	V. 1480°C 2700°F	XTA-W5R26-U-125-30-A-***-DUAL
		XTA-W5R26-U-187-30-A-***-DUAL
		XTA-W5R26-U-187-24-A-***-DUAL
		XTA-W5R26-U-250-30-A-***-DUAL
		XTA-W5R26-U-250-24-A-***-DUAL
Rt Pt-13% Rh vs. Pt	V. 1475°C 2700°F	XTA-P13R-U-125-30-A-***-DUAL
		XTA-P13R-U-187-30-A-***-DUAL
		XTA-P13R-U-187-24-A-***-DUAL
		XTA-P13R-U-250-30-A-***-DUAL
		XTA-P13R-U-250-24-A-***-DUAL
C W-5% Re vs. W-26% Re	O.I.V. 1150°C 2100°F	XIN-W5R26-U-125-30-A-***-DUAL
		XIN-W5R26-U-187-30-A-***-DUAL
		XIN-W5R26-U-187-24-A-***-DUAL
		XIN-W5R26-U-250-30-A-***-DUAL
		XIN-W5R26-U-250-24-A-***-DUAL
Rt Pt-13% Rh vs. Pt	O.I.V. 870°C 1600°F	XIN-P13R-U-125-30-A-***-DUAL
		XIN-P13R-U-187-30-A-***-DUAL
		XIN-P13R-U-187-24-A-***-DUAL
		XIN-P13R-U-250-30-A-***-DUAL
		XIN-P13R-U-250-24-A-***-DUAL



Performs two functions with ONE dual element probe!



Visit OMEGA for complete specifications, termination options, footnotes, and ordering example.

Dual element thermocouple assemblies are rigid construction—not bendable.

Termination style Q, add additional cost to base price. Termination style NX (NOX), add additional cost to base price. Termination style MQ, add additional cost to base price. Termination style SX, add additional cost to base price. Termination style TJ, add additional cost to base price. Termination style TJ-BX, add additional cost to base price. Termination style TJ-SB, add additional cost to base price. Termination style RP, no additional cost. Termination style NB1/NB12, add additional cost to base price for NB1/NB12 style heads.

Add additional cost to base price for NEMA 4X rated head, specify NB15. Add additional cost to base price for explosion resistant rated head, specify NEPB or NEPA Termination style NB1-LK/NB12-LK. Add additional cost to base price for NB1/NB12 style heads. Add additional cost to base price for NEMA 4X rated head, specify NB15-LK. Add additional cost to base price for explosion resistant rated read, specify NEPB-LK or NEPA-LK.