

Thermocouples

Mineral Insulated

Watlow's mineral insulated thermocouples are fast-responding, durable, and capable of handling high temperatures.

These thermocouples are manufactured with best-in-class XACTPAK®, Watlow's trademark for metal sheathed, mineral insulated (MI) thermocouple material. XACTPAK responds fast because the protective metal outer sheath allows the use of smaller diameter thermocouple conductors. The rock hard compacted MgO insulation further enhances the sensor's ability to "read" temperature by transferring heat quickly to the measuring junction.

The XACTPAK protecting sheath and compacted insulation outperforms bare wire thermocouples in most applications.

Performance Capabilities

- Easily handles temperatures up to 1200°C (2200°F)
- Meets or exceeds initial calibration tolerances per ASTM E 230

Features and Benefits

Special mineral insulation

- Protects thermocouple from moisture and thermal shock
- Permits operation in high temperature, high pressure environments

Diameters as small as 0.010 in. (0.25 mm)

- Ideal when physical space or extremely fast response are critical

Flexibility of the XACTPAK material

- Allows you to form and bend the thermocouple, without risk of cracking, to meet your design requirements



Outer sheath

- Protects the wires from oxidation and hostile environments

Wide range of sheath materials, diameters, and calibrations

- Meet specific requirements

In-house manufacturing of XACTPAK material

- Rigid quality control procedures
- Assures high standards are met
- Single source reliability

Custom capabilities

- Include options such as special lead lengths, lead wires and terminations

Applications

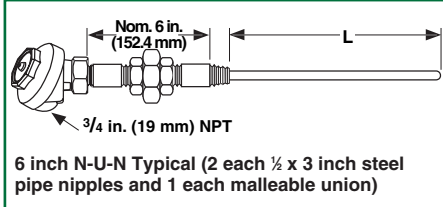
- Heat treating
- Furnaces/kilns
- Turbines
- Bearing temperature
- Power stations
- Steam generators
- Diesel engines
- Nuclear reactors
- Atomic research
- Jet engines and test cells
- Rocket engines
- Semiconductor manufacturing
- Refineries/oil processing
- Catalytic reformers
- Food processing

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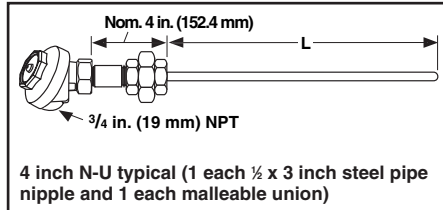
Mineral Insulated

For Use With Thermowells Style AT

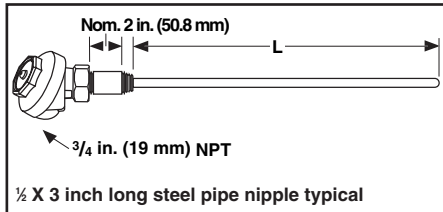
Type 1



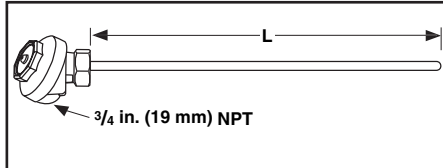
Type 2



Type 3



Type 4



Note: For a complete sensor, add thermowell part number to the 15-digit AT part number. For sheath length use "AR" (as required) and factory will determine correct length. See thermowell section, pages 144 to 146.

Custom Ordering Information—Items in **Bolded Green Type** are preferred with shorter lead times.

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
	A	T	J			0									0
3. Sheath O.D. (inch)	_____														
J = 0.250															
4. Connection Head	_____														
C = Polypropylene (1/2 inch NPT thermocouple opening only)															
D = Small cast iron															
E = Small aluminum															
H = Explosion proof (1/2 inch NPT and 3/4 inch NPT thermocouple opening only)															
5. Cold End Configuration	_____														
1 = Type 1, six inch nipple-union-nipple															
2 = Type 2, four inch nipple-union															
3 = Type 3, three inch nipple															
4 = Type 4, no extensions															
Note: Steel nipple and unions are standard.															
6. Enter "0"	_____														
7. Sheath Material	_____														
A = 304 SS															
F = 316 SS															
Q = Alloy 600 (Type K)															
8-9. Sheath Length "L" (whole inch)	_____														
Available lengths: 01 to 99, over 99 consult factory															
10. Sheath Length "L" (fractional inch)	_____														
0 = Not required, complete assembly															
1 = 1/8 3 = 3/8 5 = 5/8 7 = 7/8															
2 = 1/4 4 = 1/2 6 = 3/4															
11. Junction	_____														
	Grounded							Ungrounded							
Single	G							U							
Dual, isolated	—							W							
12. Calibration	_____														
	E	J	K	N	T										
Standard limits	E	J	K	N	T										
Special limits	2	3	4	—	8										
13. Enter "0"	_____														
14. Spring-Loading	_____														
Y = Yes															
N = No															
15. Special Requirements	_____														
0 = None															
X = Special requirements, consult factory															

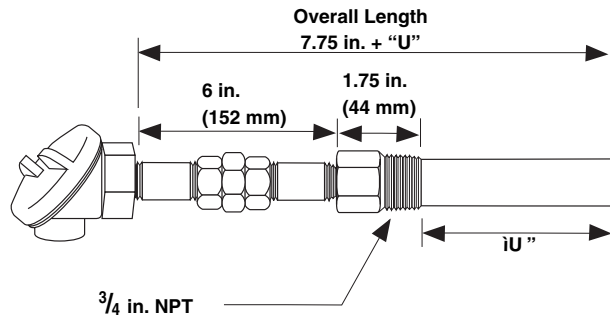


See the hardware section, pages 156 to 157, for a complete description of Watlow connection heads.

Thermocouples

Mineral Insulated Style AT With Thermowells

Straight Well

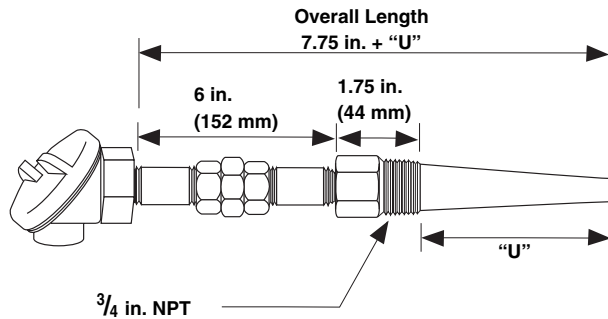


Rapid Ship Sensors

Rapid Ship sensors come with 316 SS straight well, nipple-union-nipple, 0.250 inch diameter spring loaded element, small aluminum connection head and ungrounded junction.

Calibration	"U"		Overall Length		Part Number
	in.	(mm)	in.	(mm)	
J	2.5	(64)	10.25	261	ATJE1SF024UJ0Y0
	4.5	(114)	12.25	312	ATJE1SF044UJ0Y0
	7.5	(191)	15.25	388	ATJE1SF074UJ0Y0
	10.5	(267)	18.25	465	ATJE1SF104UJ0Y0
K	2.5	(64)	10.25	261	ATJE1SF024UK0Y0
	4.5	(114)	12.25	312	ATJE1SF044UK0Y0
	7.5	(191)	15.25	388	ATJE1SF074UK0Y0
	10.5	(267)	18.25	465	ATJE1SF104UK0Y0

Tapered Well



Rapid Ship Sensors

Rapid Ship sensors come with 316 SS tapered well, nipple-union-nipple, 0.250 inch diameter spring loaded element, small aluminum connection head and ungrounded junction.

Calibration	"U"		Overall Length		Part Number
	in.	(mm)	in.	(mm)	
J	2.5	(64)	10.25	261	ATJE1TF024UJ0Y0
	4.5	(114)	12.25	312	ATJE1TF044UJ0Y0
	7.5	(191)	15.25	388	ATJE1TF074UJ0Y0
	10.5	(267)	18.25	465	ATJE1TF104UJ0Y0
K	2.5	(64)	10.25	261	ATJE1TF024UK0Y0
	4.5	(114)	12.25	312	ATJE1TF044UK0Y0
	7.5	(191)	15.25	388	ATJE1TF074UK0Y0
	10.5	(267)	18.25	465	ATJE1TF104UK0Y0