

## Thermocouples

### General Applications

Over 90 years of manufacturing, research and design makes Watlow a world class supplier of temperature measurement products. We have designed and manufactured millions of thermocouples for industrial and commercial equipment. People involved in critical process control of food, plastics and metal rely on our sensors.

We are ready to meet your sensing needs with our extensive offering of thermocouples. However, if the variations listed in this catalog are unable to satisfy your requirements, Watlow can custom manufacture sensors to your exacting specifications. Contact your Watlow representative for details.

#### Performance Capabilities

- Fiberglass insulated thermocouples are capable of temperatures up to 480°C (900°F) for continuous operation.

#### Features and Benefits

##### “Custom-tailored” standard products including:

- 32 standard sheath lengths
- Lead lengths from six to 360 inches
- Stainless steel braid or hose protection
- J, K, T and E calibrations
- Grounded, ungrounded and exposed junctions
- Flat and drill point
- Epoxy sealed cold ends
- Adjustable depths
- Flexible extensions
- Washers, nozzles and clamp bands
- Custom diameters
- PFA coated and stainless steel sheaths
- Straight, 45° bend or 90° bend
- Locking bayonet caps in standard, 12 mm and 15 mm



#### Custom manufactured thermocouples

- Units designed and built to your specifications

#### Applications

- Plastic injection molding machinery
- Food processing equipment
- Deicing
- Plating baths
- Industrial processing
- Medical equipment
- Pipe tracing control
- Industrial heat treating

- Packaging equipment
- Liquid temperature measurement
- Refrigerator temperature control
- Oven temperature control

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### Construction and Tolerances

#### Construction

Thermocouples feature flexible SERV-RITE® wire insulated with woven fiberglass or high temperature engineered resins. For added protection against abrasion, products can be provided with stainless steel wire braid and flexible armor. ASTM E 230 color-coding identifies standard catalog

thermocouple types (see reference chart on inside back cover).

The addition of a metal sheath over the thermocouple provides rigidity for accurate placement and added protection of the sensing junction. Mounting options include springs, ring terminals, specialized bolts, pipe style clamps and shims.

#### How to Order

- Determine style of thermocouple required
- Complete the eleven digit part number as determined by the following parameters:
  - Construction
  - Diameter
  - Calibration
  - Lead protection
  - Junction
  - Sheath length
  - Lead length
  - Terminations/options

**Note:** All eleven spaces must be filled in.

#### Availability

**Rapid Ship** sensors are available for same or next day shipment.

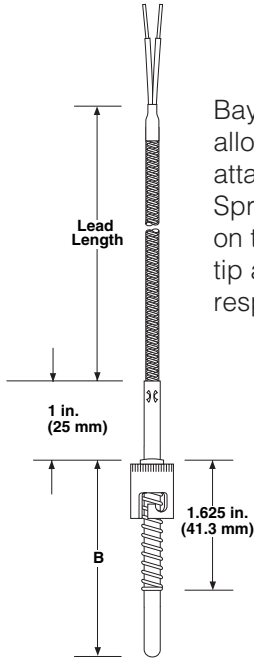
**Preferred** sensor options are available for shipment in approximately three days.

For **custom built** products consult factory for approximate shipment time.

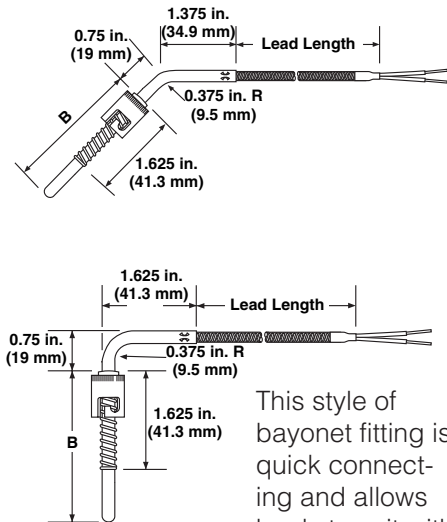
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### Rigid Sheath Fixed Bayonet Style



Bayonet fittings allow rapid attachment. Spring pressure on the junction tip assures fast response time.



This style of bayonet fitting is quick connecting and allows leads to exit with a protective sheath.

① Reference page 29 to calculate "B" dimension.

\*Not available with 1/8 inch diameter sheath.

**Metric sizes available for made-to-order units, consult factory. Minimum order quantity may apply.**

### Rapid Ship Sensors

Rapid Ship sensors come with 3/16 inch diameter sheath, 24 gauge stranded fiberglass lead with stainless steel overbraid, grounded junction and a split lead termination.

Calibration	"B" Dimension		Lead Length		Part Number
	in.	(mm)	in.	(mm)	
J	2	(51)	48	(1219)	30DJSGD048A
			96	(2438)	30DJSGD096A
	3	(76)	48	(1219)	30DJSGF048A
			96	(2438)	30DJSGF096A
4	(102)	48	(1219)	30DJSGH048A	
		96	(2438)	30DJSGH096A	

**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

#### 1-2. Construction Style

**30 = Bayonet cap with spring, straight**

31 = Bayonet cap with spring, 45° bend

32 = Bayonet cap with spring, 90° bend

#### 3. Sheath Diameter (inch), 316 SS

C = 1/8 S = 1/8 epoxy sealed 149°C (300°F)

D = 3/16 T = 3/16 epoxy sealed 149°C (300°F)

#### 4. Calibration

J = Type J T = Type T

K = Type K E = Type E

#### 5. Lead Protection

F = Fiberglass (24 gauge stranded)

**S = Fiberglass with stainless steel overbraid (24 gauge stranded)**

**H = Fiberglass with stainless steel hose (24 gauge stranded)**

\*P = Fiberglass (20 gauge stranded)

**\*B = Fiberglass with stainless steel overbraid (20 gauge stranded)**

**\*C = Fiberglass with stainless steel hose (20 gauge stranded)**

O = Plug or jack termination on sheath fiberglass (24 gauge stranded)

T = PFA (24 gauge stranded)

U = PFA with stainless steel overbraid (24 gauge stranded)

K = PFA with stainless steel hose (24 gauge stranded)

\*V = PFA (20 gauge stranded)

\*W = PFA with stainless steel overbraid (20 gauge stranded)

\*Y = PFA with stainless steel hose (20 gauge stranded)

#### 6. Junction

F = Grounded, flat tip P = Ungrounded, drill point

**G = Grounded, round tip** E = Exposed

D = Grounded, drill point \*H = Grounded, round tip, dual element

R = Ungrounded, flat tip \*S = Ungrounded, round tip, dual element

#### U = Ungrounded, round tip

#### 7. "B" Dimension<sup>①</sup> (inches)

D = 2 G = 3 1/2 K = 5 N = 6 1/2 R = 8 U = 9 1/2 Z = 12

E = 2 1/2 H = 4 L = 5 1/2 P = 7 S = 8 1/2 W = 10

F = 3 J = 4 1/2 M = 6 Q = 7 1/2 T = 9 Y = 11

#### 8-10. Lead Length (inches)

**012, 024, 036, 040, 048, 060, 072, 079, 096 and 120**

Available lengths: 006 to 360, over 360 consult factory

#### 11. Terminations/Options

**A = Standard, 2 1/2 inch split leads**

B = 2 1/2 inch split leads with #6 spade lugs

C = 2 1/2 inch split leads with #6 spade lugs and BX connector

**D = Standard male plug, quick disconnect**

E = Standard female jack, quick disconnect

F = Miniature male plug, quick disconnect

G = Miniature female jack, quick disconnect

H = 1/4 inch push-on connector

R = Double slotted 12 mm bayonet cap, split end leads

S = Double slotted 15 mm bayonet cap, split end leads