CONTROL PANEL

TABLE 4

Thermocouple / Instrumentation Extension Wire

GAUGE	ANSI TYPE	FIG.	INSULATION TEMPERATURE	CAT. NUMBER
16	XL	11	PVC 105°C	OJS162P
20	XL	11		OJS203P
16	KX	11		OKS164P
20	KX	11		OKS205P
16	KX	12	G-GLAS, 510°C	OKS166G
20	KX	12	FIBERGLASS	OKS207F

WHEN ORDERING, PLEASE SPECIFY: Quantity, catalogue number, and extra features.

JUNCTIONS

Various junction constructions measurements can be done according to the application.

Grounded junction

- » Made by welding in an inert atmosphere to allow the two thermocouple wires to be incorporated to the sheath weld closure.
 - Wires are grounded to the sheath.
- » Features:
 - Slower response than exposed wire.
 - Pressure tight above 100,000 psi.
 - Wires are protected from mechanical damage.
 - · Wires are not exposed to environment and will last longer.
 - Coefficient of expansion wire must be similar to that of sheath in order to avoid pulling part of hot junction.

Ungrounded junction

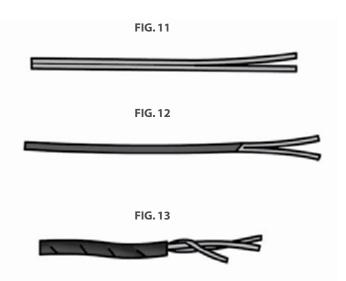
- Similar construction as grounded junction except that the thermocouple wires are first made into a junction, then insulated from the sheath and the sheath closure.
- » The closure is shaped by welding without the themocouple wires.
- » The thermocouple is "ungrounded" in relation to the sheath material.
- » Features:
 - Slower response than exposed wire.
 - Pressure tight above 100,000 psi.
 - Wires are protected from mechanical damage.
 - Wires are not exposed to environment and will last longer.
 - Differential expansion between wires and sheath.

Weld pad junction

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- » Used as a fastening means for thermocouples to surfaces (plates and tubes) to provide efficient surface temperature measurement.
- » Standard alloy pad: 1" x 1" x 1/8".
- » Same composition as the sheath.
- » Available skins: parallel, perpendicular and tube.

THERMOCOUPLE WIRE



Exposed junction

- » Thermocouple wires are exposed due to the removal of the sheath and the insulating material.
- » Wires are joined to make a measuring junction.
- » The junction is of a but-weld type.
 - Features:

>>

- Faster response.
- Exposed magnesium will be affected by moisture.
- Not pressure tight.
- Wires are subjected to mechanical damage.
- · Wires are exposed to environment and will have shorter service life.
- Useful life shortened resulting from rapid calibration.

THE TRANSITION

WATTCO^ ${\mbox{\tiny M}}$ transition protects the splice between the extension wires and thermocouple wires from:

- » Moisture
- > Vibration
- » Mechanical damage

Standard transitions can be used in the following temperature ranges: -185°C – 250°C (-300°F – 500°F).

Standard potting adaptor: 5/16 diameter X 1"long.

(1-800-492-8826)

CONTROL PANELS controls

CALIBRATION TYPE

ANSI TYPE	FEATURES	TEMPERATURE RANGE °C	TOLERANCE GRADE	
			STANDARD	SPECIAL
K (Chromel + vs. Alumel)	 The most popular industrial model Reliable and accurate to 1260°C Can be used in oxidizing, inert and reducing atmospheres Must be protected from sulfurous or "green-rot" corrosio atmospheres as it can result in negative calibration errors 	0 – 277 277 – 1260	± 2.2°C ± 0.75%	± 1.1°C ± 0.4%
J (Iron + vs. Constantan)	 >> Used for reducing, inert, oxidizing or vacuum atmospheres up to 750°C >> Not to be used in sulfurous atmospheres above 538°C 	0 – 277 277 – 760	± 2.2°C ± 0.75%	± 1.1℃ ± 0.38%
T (Copper + vs. Constantan)	 Corrosion resistant in moist atmospheres Ideal for temperatures measurements under zero Can be used in vacuum and in oxidizing, reducing or inert atmospheres up to 400°C Commonly used in laboratories due to its stable and precise EMF characteristics 	-184 – -59 -101 – -59 -59 – 93 93 – 371	 ± 2% ± 1% ± 0.75%	± 1% ± 0.5℃ ± 0.38%
E (Chromel + vs. Constantan	 Has the highest EMF characteristics For practical applications, refer to precautions listed in type K thermocouple Can be used up to 750°C continuously Commonly used in large scale thermal and nuclear power plants 	0 – 315 315 – 871	± 1.7°C ± 0.5%	± 1℃ ± 0.38%
R S	» Available upon request	0 – 538 538 – 1482	± 2.8°C ± 0.5%	± 1.4°C ± 0.25%
В	» Available upon request	871 – 1704	± 0.5%	_
Ν	» Available upon request	N/A	N/A	N/A

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SHEATH MATERIAL							
304 STAINLESS STEEL	310 STAINLESS STEEL	316 STAINLESS STEEL	800 INCONEL®				
 General purpose Economical Readily available Good corrosion resistant to organic and inorganic chemicals Subjected to carbide precipitation in the 480°C to 870°C range Maximum operating temperature: 900°C (1680°F) 	 Superior to 304 stainless steel in high temperature applications The best corrosion resistant sheath material to oxidation of the "300" series Maximum operating temperature: 1150°C (2100°F) 	 » Superior corrosion resistant material than type 304 and 310 stainless steel » Mostly used in food processing industry » Ideal for sulfuric acid compounds » Maximum operating temperature: 900°C (1650°F) 	 Composed of high nickel, high chromium content for resistance to oxidizing and reducing environments and for highly corrosive environments at high temperatures Used in furnaces, chemical and food processing equipment Maximum operating temperature: 1150°C (2100°F) 				

Note: Other types of sheath materials are available upon request.

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