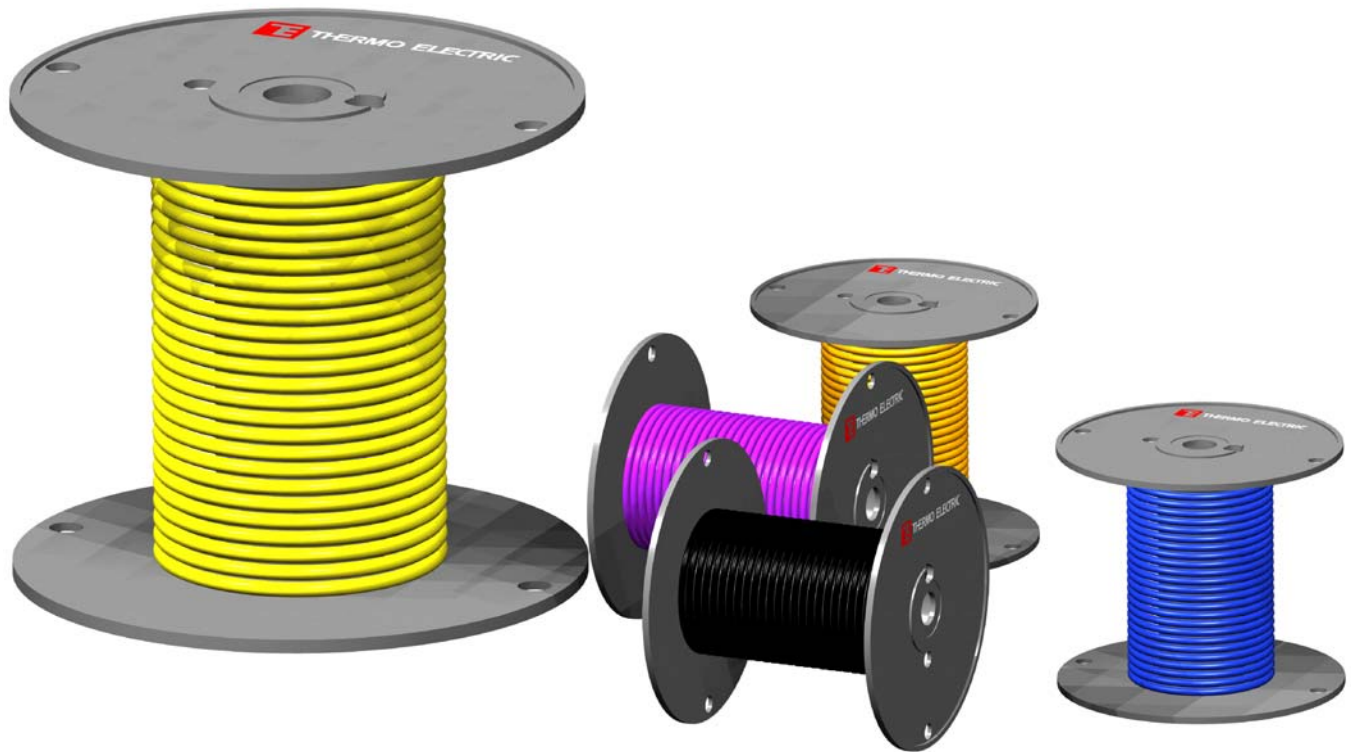




THERMO ELECTRIC

WIRE and CABLE

Section WIRE



The development of world markets has created an unprecedented need for high industrial plant productivity to meet the challenge of increased competition. Improved sensors, instrumentation, computers, and new levels of automation are being relied upon to achieve the required level of plant efficiency. Critical to the performance of these tools of productivity are wire and cable products which reliably transmit electrical signals and data under harsh environmental conditions. Furthermore, these wire and cable products, once installed, must often withstand adverse conditions for many years. Thermo Electric is helping to meet these needs by supplying top quality thermocouple wire and cable and RTD wire products to meet the demands of industry.

Thermocouple and Thermocouple Extension Wire and Cable

Thermo Electric insulated thermocouple wire is carefully calibrated and is traceable to the National Institute for Standards and Technology (NIST) for conformance to ISA and ANSI recommended initial calibration tolerances. Thermocouple grade wire can be used as a reliable, inexpensive, thermocouple simply by soldering or welding a junction on one end. Thermocouple extension grade wire is used to economically extend thermocouples to instrumentation in installations where the cost of thermocouple grade wire would be prohibitive. High accuracy is nonetheless maintained because these extension wires are constructed of thermocouple materials and insulated for maximum resistance to your application hazards. Standard thermocouple wire constructions can be selected for such special requirements as high abrasion, moisture and chemical resistance. Solid or stranded wires, and twisted and shielded wires for electrical interference rejection are available. Metal coverings are available for increased resistance to mechanical stress and abrasion. Insulating and jacketing materials include PVC, TEFLON® FEP TFE PFA, Kapton, fiberglass, vitreous silica, Q-glass and stainless steel overbraid.

CALIBRATION: ANSI Type J

ORDERING CODE		CONDUCTOR SIZE (AWG)	NOMINAL LOOP RESISTANCE (2)
STANDARD	SPECIAL (1)		
W-P/P-24F-JX	W-P/P-24F-JJX	24 STRANDED	0.848
W-P/P-24-JX	W-P/P-24-JJX	24 SOLID	0.928
W-P/P-20F-JX	W-P/P-20F-JJX	20 STRANDED	0.335
W-P/P-20-JX	W-P/P-20-JJX	20 SOLID	0.367
W-P/P-18-JX	W-P/P-18-JJX	18 SOLID	0.234

CALIBRATION: ANSI Type K

ORDERING CODE		CONDUCTOR SIZE (AWG)	NOMINAL LOOP RESISTANCE (2)
STANDARD	SPECIAL (1)		
W-P/P-24F-KX	W-P/P-24F-KKX	24 STRANDED	1.361
W-P/P-24-KX	W-P/P-24-KKX	24 SOLID	1.490
W-P/P-20F-KX	W-P/P-20F-KKX	20 STRANDED	0.538
W-P/P-20-KX	W-P/P-20-KKX	20 SOLID	0.589
W-P/P-18-KX	W-P/P-18-KKX	18 SOLID	0.376

CALIBRATION: ANSI Type T

ORDERING CODE		CONDUCTOR SIZE (AWG)	NOMINAL LOOP RESISTANCE (2)
STANDARD	SPECIAL (1)		
W-P/P-24F-TX	W-P/P-24F-TTX	24 STRANDED	0.701
W-P/P-24-TX	W-P/P-24-TTX	24 SOLID	0.768
W-P/P-20F-TX	W-P/P-20F-TTX	20 STRANDED	0.277
W-P/P-20-TX	W-P/P-20-TTX	20 SOLID	0.304
W-P/P-18-TX	W-P/P-18-TTX	18 SOLID	0.194

CALIBRATION: ANSI Type E

ORDERING CODE		CONDUCTOR SIZE (AWG)	NOMINAL LOOP RESISTANCE (2)
STANDARD	SPECIAL (1)		
W-P/P-24F-EX	W-P/P-24F-EEX	24 STRANDED	1.639
W-P/P-24-EX	W-P/P-24-EEX	24 SOLID	1.795
W-P/P-20F-EX	W-P/P-20F-EEX	20 STRANDED	0.648
W-P/P-20-EX	W-P/P-20-EEX	20 SOLID	0.709
W-P/P-18-EX	W-P/P-18-EEX	18 SOLID	0.453

CALIBRATION: ANSI Type N

ORDERING CODE		CONDUCTOR SIZE (AWG)	NOMINAL LOOP RESISTANCE (2)
STANDARD	SPECIAL (1)		
W-P/P-24F-NX	W-P/P-24F-NNX	24 STRANDED	1.808
W-P/P-24-NX	W-P/P-24-NNX	24 SOLID	1.980
W-P/P-20F-NX	W-P/P-20F-NNX	20 STRANDED	0.715
W-P/P-20-NX	W-P/P-20-NNX	20 SOLID	0.783
W-P/P-18-NX	W-P/P-18-NNX	18 SOLID	0.500

CALIBRATION: ANSI Type SX/RX

ORDERING CODE		CONDUCTOR SIZE (AWG)	NOMINAL LOOP RESISTANCE (2)
STANDARD	SPECIAL (1)		
W-P/P-24F-SX		24 STRANDED	0.091
W-P/P-24-SX		24 SOLID	0.100
W-P/P-20F-SX		20 STRANDED	0.036
W-P/P-20-SX		20 SOLID	0.040
W-P/P-18-SX		18 SOLID	0.025

CALIBRATION: ANSI Type BX

ORDERING CODE		CONDUCTOR SIZE (AWG)	NOMINAL LOOP RESISTANCE (2)
STANDARD	SPECIAL (1)		
W-P/P-24F-BX		24 STRANDED	0.227
W-P/P-24-BX		24 SOLID	0.248
W-P/P-20F-BX		20 STRANDED	0.090
W-P/P-20-BX		20 SOLID	0.098
W-P/P-18-BX		18 SOLID	0.063

CONDUCTOR SIZE (AWG)	INSULATION THICKNESS	JACKET THICKNESS	NOMINAL DIMENSIONS	APPROX. SHIPPING WT. lbs/1000 Ft. (Kg)
24 STRANDED	.015	.015	.084/.138	11 lbs (5.0 Kg)
24 SOLID	.015	.015	.080/.130	10 lbs (4.5 Kg)
20 STRANDED	.015	.015	.098/.166	16 lbs (7.3 Kg)
20 SOLID	.015	.015	.092/.154	14 lbs (6.4 Kg)
18 SOLID	.015	.015	.100/.170	21 lbs (9.5 Kg)



PVC INSULATED TYPE W-P/P (THERMOCOUPLE EXTENSION GRADE)

PVC INSULATION

Individual conductors are insulated with a flexible polyvinyl chloride. Conductors are laid parallel and covered with an overall polyvinyl chloride jacket. Nominal insulation thickness, 15 mils.

PERFORMANCE FEATURES

- Flexible, easy to strip
- Good abrasion and chemical resistance

APPLICATIONS

- Low cost general extension wire
- Petro Chemical Plants
- Laboratories and Test Facilities

CALIBRATION	COLOR CODE (ANSI)			COLOR CODE (IEC)*		
	POSITIVE	NEGATIVE	OVERALL	POSITIVE	NEGATIVE	OVERALL
TYPE JX	WHITE	RED	BLACK	BLACK	WHITE	BLACK
TYPE KX	YELLOW	RED	YELLOW	GREEN	WHITE	GREEN
TYPE TX	BLUE	RED	BLUE	BROWN	WHITE	BROWN
TYPE EX	PURPLE	RED	PURPLE	PURPLE	WHITE	PURPLE
TYPE NX	ORANGE	RED	ORANGE	PINK	WHITE	PINK
TYPE SX/RX	BLACK	RED	GREEN	ORANGE	WHITE	ORANGE
BX	GRAY	RED	GRAY	RED	GRAY	GRAY

* Add (-IEC) to the end of the ordering code for IEC color coded insulation and jacketed wire.

Example: W-P/P-20-J-IEC

INITIAL CALIBRATION TOLERANCES Per ANSI MC96.1 and ASTM E230 (°F)					
TEMPERATURE RANGE	STANDARD		SPECIAL		
	CALIBRATION	TOLERANCE	CALIBRATION	TOLERANCE	
32 to 400°F	TYPE JX	±4.0°F	TYPE JJX	±2.0°F	
32 to 400°F	TYPE KX	±4.0°F	TYPE KKX	±2.0°F	
32 to 212°F	TYPE TX	±1.8°F	TYPE TTX	±0.9°F	
32 to 400°F	TYPE EX	±3.0°F	TYPE EEX	±1.8°F	
32 to 400°F	TYPE NX	±4.0°F	TYPE NNX	±2.0°F	
32 to 400°F	TYPE SX, RX*	±9.0°F			
32 to 212°F	TYPE BX**	±6.7°F			

* Type S and R thermocouples utilize the same extension wire.

** Copper versus copper can be used as extension wire for type B thermocouples if transition temperature is at or below 212°F for a maximum error of 6.7°F. Above 212°F, PCLW30-6 alloy (or equivalent) should be used as the positive extension wire with copper as the negative extension wire. (Note: PCLW30-6 or equivalent can also be used in the 122°F to 212°F temperature range, which will reduce the error to -0/+4°F.)

Notes:

- (1) Meets or exceeds Special Initial Calibration Tolerances per ANSI MC96.1-1982 and ASTM E230-1993.
- (2) Nominal resistance in OHMS per double feet at 68°F (20°C).



THERMO ELECTRIC

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SECTION WIRE

PVC INSULATED WIRE

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Doc. No.: TE-CO010109-WIRE-010

CALIBRATION: ANSI Type J

ORDERING CODE		CONDUCTOR SIZE (AWG)	NOMINAL LOOP RESISTANCE (2)
STANDARD	SPECIAL (1)		
W-P/ALPTW-24F-JX	W-P/ALPTW-24F-JJX	24 STRANDED	0.848
W-P/ALPTW-24-JX	W-P/ALPTW-24-JJX	24 SOLID	0.928
W-P/ALPTW-20F-JX	W-P/ALPTW-20F-JJX	20 STRANDED	0.335
W-P/ALPTW-20-JX	W-P/ALPTW-20-JJX	20 SOLID	0.367
W-P/ALPTW-18-JX	W-P/ALPTW-18-JJX	18 SOLID	0.234

CALIBRATION: ANSI Type K

ORDERING CODE		CONDUCTOR SIZE (AWG)	NOMINAL LOOP RESISTANCE (2)
STANDARD	SPECIAL (1)		
W-P/ALPTW-24F-KX	W-P/ALPTW-24F-KKX	24 STRANDED	1.361
W-P/ALPTW-24-KX	W-P/ALPTW-24-KKX	24 SOLID	1.490
W-P/ALPTW-20F-KX	W-P/ALPTW-20F-KKX	20 STRANDED	0.538
W-P/ALPTW-20-KX	W-P/ALPTW-20-KKX	20 SOLID	0.589
W-P/ALPTW-18-KX	W-P/ALPTW-18-KKX	18 SOLID	0.376

CALIBRATION: ANSI Type T

ORDERING CODE		CONDUCTOR SIZE (AWG)	NOMINAL LOOP RESISTANCE (2)
STANDARD	SPECIAL (1)		
W-P/ALPTW-24F-TX	W-P/ALPTW-24F-TTX	24 STRANDED	0.701
W-P/ALPTW-24-TX	W-P/ALPTW-24-TTX	24 SOLID	0.768
W-P/ALPTW-20F-TX	W-P/ALPTW-20F-TTX	20 STRANDED	0.277
W-P/ALPTW-20-TX	W-P/ALPTW-20-TTX	20 SOLID	0.304
W-P/ALPTW-18-TX	W-P/ALPTW-18-TTX	18 SOLID	0.194

CALIBRATION: ANSI Type E

ORDERING CODE		CONDUCTOR SIZE (AWG)	NOMINAL LOOP RESISTANCE (2)
STANDARD	SPECIAL (1)		
W-P/ALPTW-24F-EX	W-P/ALPTW-24F-EEX	24 STRANDED	1.639
W-P/ALPTW-24-EX	W-P/ALPTW-24-EEX	24 SOLID	1.795
W-P/ALPTW-20F-EX	W-P/ALPTW-20F-EEX	20 STRANDED	0.648
W-P/ALPTW-20-EX	W-P/ALPTW-20-EEX	20 SOLID	0.709
W-P/ALPTW-18-EX	W-P/ALPTW-18-EEX	18 SOLID	0.453

CALIBRATION: ANSI Type N

ORDERING CODE		CONDUCTOR SIZE (AWG)	NOMINAL LOOP RESISTANCE (2)
STANDARD	SPECIAL (1)		
W-P/P-24F-NX	W-P/P-24F-NNX	24 STRANDED	1.808
W-P/P-24-NX	W-P/P-24-NNX	24 SOLID	1.980
W-P/P-20F-NX	W-P/P-20F-NNX	20 STRANDED	0.715
W-P/P-20-NX	W-P/P-20-NNX	20 SOLID	0.783
W-P/P-18-NX	W-P/P-18-NNX	18 SOLID	0.500

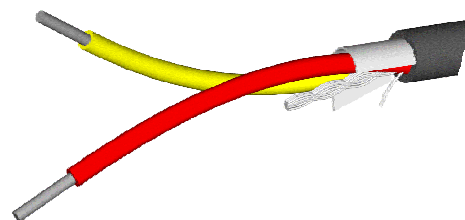
CALIBRATION: ANSI Type SX/RX

ORDERING CODE		CONDUCTOR SIZE (AWG)	NOMINAL LOOP RESISTANCE (2)
STANDARD	SPECIAL (1)		
W-P/ALPTW-24F-SX		24 STRANDED	0.091
W-P/ALPTW-24-SX		24 SOLID	0.100
W-P/ALPTW-20F-SX		20 STRANDED	0.036
W-P/ALPTW-20-SX		20 SOLID	0.040
W-P/ALPTW-18-SX		18 SOLID	0.025

CALIBRATION: ANSI Type BX

ORDERING CODE		CONDUCTOR SIZE (AWG)	NOMINAL LOOP RESISTANCE (2)
STANDARD	SPECIAL (1)		
W-P/ALPTW-24F-BX		24 STRANDED	0.227
W-P/ALPTW-24-BX		24 SOLID	0.248
W-P/ALPTW-20F-BX		20 STRANDED	0.090
W-P/ALPTW-20-BX		20 SOLID	0.098
W-P/ALPTW-18-BX		18 SOLID	0.063

CONDUCTOR SIZE (AWG)	INSULATION THICKNESS	JACKET THICKNESS	NOMINAL DIMENSIONS	APPROX. SHIPPING WT. lbs/1000 Ft. (Kg)
24 STRANDED	.015	.020	.148	14 lbs (6.4 Kg)
24 SOLID	.015	.020	.140	13 lbs (5.9 Kg)
20 STRANDED	.015	.020	.176	24 lbs (10.9 Kg)
20 SOLID	.015	.020	.164	22 lbs (10.0 Kg)
18 SOLID	.015	.020	.200	30 lbs (13.6 Kg)

PVC INSULATED SHIELDED
TYPE W-P/ALPTW (THERMOCOUPLE EXTENSION GRADE)

PVC INSULATION

Individual conductors are insulated with a flexible polyvinyl chloride. Conductors are twisted with a polyester backed aluminum tape shield applied with a bare stranded copper drain wire. A polyvinyl chloride jacket is extruded over the shielded pair. Nominal insulation thickness, 15 to 20 mils.

PERFORMANCE FEATURES

Flexible, easy to strip
Good abrasion and chemical resistance
Twisted and shielded construction eliminates most problems associated with noise interference

APPLICATIONS

Low cost general extension wire
Petro Chemical Plants
Laboratories and Test Facilities

CALIBRATION	COLOR CODE (ANSI)			COLOR CODE (IEC)*		
	POSITIVE	NEGATIVE	OVERALL	POSITIVE	NEGATIVE	OVERALL
TYPE JX	WHITE	RED	BLACK	BLACK	WHITE	BLACK
TYPE KX	YELLOW	RED	YELLOW	GREEN	WHITE	GREEN
TYPE TX	BLUE	RED	BLUE	BROWN	WHITE	BROWN
TYPE EX	PURPLE	RED	PURPLE	PURPLE	WHITE	PURPLE
TYPE NX	ORANGE	RED	ORANGE	PINK	WHITE	PINK
TYPE SX/RX	BLACK	RED	GREEN	ORANGE	WHITE	ORANGE
BX	GRAY	RED	GRAY	RED	GRAY	GRAY

* Add (-IEC) to the end of the ordering code for IEC color coded insulation and jacketed wire.

Example: W-P/ALPTW-20-J-IEC

INITIAL CALIBRATION TOLERANCES Per ANSI MC96.1 and ASTM E230 (°F)					
TEMPERATURE RANGE	STANDARD		SPECIAL		
	CALIBRATION	TOLERANCE	CALIBRATION	TOLERANCE	
32 to 400°F	TYPE JX	±4.0°F	TYPE JJX	±2.0°F	
32 to 400°F	TYPE KX	±4.0°F	TYPE KKX	±2.0°F	
32 to 212°F	TYPE TX	±1.8°F	TYPE TTX	±0.9°F	
32 to 400°F	TYPE EX	±3.0°F	TYPE EEX	±1.8°F	
32 to 400°F	TYPE NX	±4.0°F	TYPE NNX	±2.0°F	
32 to 400°F	TYPE SX, RX*	±9.0°F			
32 to 212°F	TYPE BX**	±6.7°F			

* Type S and R thermocouples utilize the same extension wire.

** Copper versus copper can be used as extension wire for type B thermocouples if transition temperature is at or below 212°F for a maximum error of 6.7°F. Above 212°F, PCLW30-6 alloy (or equivalent) should be used as the positive extension wire with copper as the negative extension wire. (Note: PCLW30-6 or equivalent can also be used in the 122°F to 212°F temperature range, which will reduce the error to -0/+4°F.)

Notes:

- (1) Meets or exceeds Special Initial Calibration Tolerances per ANSI MC96.1-1982 and ASTM E230-1993.
- (2) Nominal resistance in OHMS per double feet at 68°F (20°C).



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SECTION WIRE

PVC INSULATED SHIELDED
WIRE

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Doc. No.: TE-CO010109-WIRE-020

CALIBRATION: ANSI Type J

ORDERING CODE		CONDUCTOR SIZE (AWG)	NOMINAL LOOP RESISTANCE (2)
STANDARD	SPECIAL (1)		
W-TEX/TEX-24F-JX	W-TEX/TEX-24F-JJX	24 STRANDED	0.848
W-TEX/TEX-24-JX	W-TEX/TEX-24-JJX	24 SOLID	0.928
W-TEX/TEX-20F-JX	W-TEX/TEX-20F-JJX	20 STRANDED	0.335
W-TEX/TEX-20-JX	W-TEX/TEX-20-JJX	20 SOLID	0.367
W-TEX/TEX-18-JX	W-TEX/TEX-18-JJX	18 SOLID	0.234

CALIBRATION: ANSI Type K

ORDERING CODE		CONDUCTOR SIZE (AWG)	NOMINAL LOOP RESISTANCE (2)
STANDARD	SPECIAL (1)		
W-TEX/TEX-24F-KX	W-TEX/TEX-24F-KKX	24 STRANDED	1.361
W-TEX/TEX-24-KX	W-TEX/TEX-24-KKX	24 SOLID	1.490
W-TEX/TEX-20F-KX	W-TEX/TEX-20F-KKX	20 STRANDED	0.538
W-TEX/TEX-20-KX	W-TEX/TEX-20-KKX	20 SOLID	0.589
W-TEX/TEX-18-KX	W-TEX/TEX-18-KKX	18 SOLID	0.376

CALIBRATION: ANSI Type T

ORDERING CODE		CONDUCTOR SIZE (AWG)	NOMINAL LOOP RESISTANCE (2)
STANDARD	SPECIAL (1)		
W-TEX/TEX-24F-TX	W-TEX/TEX-24F-TTX	24 STRANDED	0.701
W-TEX/TEX-24-TX	W-TEX/TEX-24-TTX	24 SOLID	0.768
W-TEX/TEX-20F-TX	W-TEX/TEX-20F-TTX	20 STRANDED	0.277
W-TEX/TEX-20-TX	W-TEX/TEX-20-TTX	20 SOLID	0.304
W-TEX/TEX-18-TX	W-TEX/TEX-18-TTX	18 SOLID	0.194

CALIBRATION: ANSI Type E

ORDERING CODE		CONDUCTOR SIZE (AWG)	NOMINAL LOOP RESISTANCE (2)
STANDARD	SPECIAL (1)		
W-TEX/TEX-24F-EX	W-TEX/TEX-24F-EEX	24 STRANDED	1.639
W-TEX/TEX-24-EX	W-TEX/TEX-24-EEX	24 SOLID	1.795
W-TEX/TEX-20F-EX	W-TEX/TEX-20F-EEX	20 STRANDED	0.648
W-TEX/TEX-20-EX	W-TEX/TEX-20-EEX	20 SOLID	0.709
W-TEX/TEX-18-EX	W-TEX/TEX-18-EEX	18 SOLID	0.453

CALIBRATION: ANSI Type N

ORDERING CODE		CONDUCTOR SIZE (AWG)	NOMINAL LOOP RESISTANCE (2)
STANDARD	SPECIAL (1)		
W-TEX/TEX-24F-NX	W-TEX/TEX-24F-NNX	24 STRANDED	1.808
W-TEX/TEX-24-NX	W-TEX/TEX-24-NNX	24 SOLID	1.980
W-TEX/TEX-20F-NX	W-TEX/TEX-20F-NNX	20 STRANDED	0.715
W-TEX/TEX-20-NX	W-TEX/TEX-20-NNX	20 SOLID	0.783
W-TEX/TEX-18-NX	W-TEX/TEX-18-NNX	18 SOLID	0.500

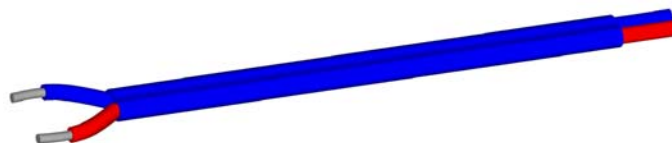
CALIBRATION: ANSI Type SX/RX

ORDERING CODE		CONDUCTOR SIZE (AWG)	NOMINAL LOOP RESISTANCE (2)
STANDARD	SPECIAL (1)		
W-TEX/TEX-24F-SX		24 STRANDED	0.091
W-TEX/TEX-24-SX		24 SOLID	0.100
W-TEX/TEX-20F-SX		20 STRANDED	0.036
W-TEX/TEX-20-SX		20 SOLID	0.040
W-TEX/TEX-18-SX		18 SOLID	0.025

CALIBRATION: ANSI Type BX

ORDERING CODE		CONDUCTOR SIZE (AWG)	NOMINAL LOOP RESISTANCE (2)
STANDARD	SPECIAL (1)		
W-TEX/TEX-24F-BX		24 STRANDED	0.227
W-TEX/TEX-24-BX		24 SOLID	0.248
W-TEX/TEX-20F-BX		20 STRANDED	0.090
W-TEX/TEX-20-BX		20 SOLID	0.098
W-TEX/TEX-18-BX		18 SOLID	0.063

CONDUCTOR SIZE (AWG)	INSULATION THICKNESS	JACKET THICKNESS	NOMINAL DIMENSIONS	APPROX. SHIPPING WT. lbs/1000 Ft. (Kg)
24 STRANDED	.008	.010	.056/.108	9 lbs (4.1 Kg)
24 SOLID	.008	.010	.052/.100	8 lbs (3.6 Kg)
20 STRANDED	.008	.010	.070/.136	14 lbs (6.4 Kg)
20 SOLID	.008	.010	.064/.124	12 lbs (5.4 Kg)
18 SOLID	.008	.010	.072/.140	18 lbs (8.2 Kg)



FEP TEFLON® INSULATED TYPE W-TEX/TEX (THERMOCOUPLE EXTENSION GRADE)

TEFLON® (FEP) or Equivalent INSULATION

Individual conductors are insulated with extruded FEP Teflon or equivalent. Conductors are laid parallel and insulated with extruded FEP Teflon or equivalent jacket.

PERFORMANCE FEATURES

Excellent low friction resistance, allows easy pulling through conduits
High flexibility
Unaffected by most chemicals
Excellent Electrical Properties

APPLICATIONS

Petrochemical Plants
Harsh and Corrosive Environments
Food and Pharmaceutical

CALIBRATION	COLOR CODE (ANSI)			COLOR CODE (IEC)*		
	POSITIVE	NEGATIVE	OVERALL	POSITIVE	NEGATIVE	OVERALL
TYPE J	WHITE	RED	BLACK	BLACK	WHITE	BLACK
TYPE K	YELLOW	RED	YELLOW	GREEN	WHITE	GREEN
TYPE T	BLUE	RED	BLUE	BROWN	WHITE	BROWN
TYPE E	PURPLE	RED	PURPLE	PURPLE	WHITE	PURPLE
TYPE N	ORANGE	RED	ORANGE	PINK	WHITE	PINK
TYPE SX/RX	BLACK	RED	GREEN	ORANGE	WHITE	ORANGE
BX	GRAY	RED	GRAY	RED	GRAY	GRAY

* Add (-IEC) to the end of the ordering code for IEC color coded insulation and jacketed wire.

Example: W-TEX/TEX-20-J-IEC

INITIAL CALIBRATION TOLERANCES Per ANSI MC96.1 and ASTM E230 (°F)				
TEMPERATURE RANGE	STANDARD		SPECIAL	
	CALIBRATION	TOLERANCE	CALIBRATION	TOLERANCE
32 to 1400°F	TYPE J	±4.0°F or ±.75%*	TYPE JJ	±2.0°F or ±.4%*
32 to 2300°F	TYPE K	±4.0°F or ±.75%*	TYPE KK	±2.0°F or ±.4%*
-320 to 32°F	TYPE T	±1.8°F or ±1.5%**	TYPE TT	±0.9°F or ±.8%**
32 to 700°F		±1.8°F or ±.75%*		±0.9°F or ±.4%*
32 to 1600°F	TYPE E	±3.0°F or ±.50%*	TYPE EE	±1.8°F or ±.5%*
32 to 2300°F	TYPE N	±4.0°F or ±.75%*	TYPE NN	±2.0°F or ±.4%*
32 to 400°F	TYPE SX, RX	±9.0°F***		
32 to 212°F	TYPE BX	±6.7°F****		

*Whichever is greater

**Values refer to specially selected cryogenic material. Special limits tolerance is based on limited data, and should only be used as a guide in establishing appropriate working tolerances.

*** Type S and R thermocouples utilize the same extension wire.

**** Copper versus copper can be used as extension wire for type B thermocouples if transition temperature is at or below 212°F for a maximum error of 6.7°F. Above 212°F, PCLW30-6 alloy (or equivalent) should be used as the positive extension wire with copper as the negative extension wire. (Note: PCLW30-6 or equivalent can also be used in the 122°F to 212°F temperature range, which will reduce the error to -0/+4°F.)

Notes:

- (1) Meets or exceeds Special Initial Calibration Tolerances per ANSI MC96.1-1982 and ASTM E230-1993.
- (2) Nominal resistance in OHMS per double feet at 68°F (20°C).



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SECTION WIRE

FEP TEFLON® INSULATED WIRE

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Doc. No.: TE-CO080715-WIRE-030

CALIBRATION: ANSI Type J

ORDERING CODE		CONDUCTOR SIZE (AWG)	NOMINAL LOOP RESISTANCE (2)
STANDARD	SPECIAL (1)		
W-TEX/ALTEXTW-24F-J	W-TEX/ALTEXTW-24F-JJ	24 STRANDED	0.848
W-TEX/ALTEXTW-24-J	W-TEX/ALTEXTW-24-JJ	24 SOLID	0.928
W-TEX/ALTEXTW-20F-J	W-TEX/ALTEXTW-20F-JJ	20 STRANDED	0.335
W-TEX/ALTEXTW-20-J	W-TEX/ALTEXTW-20-JJ	20 SOLID	0.367
W-TEX/ALTEXTW-18-J	W-TEX/ALTEXTW-18-JJ	18 SOLID	0.234

CALIBRATION: ANSI Type K

ORDERING CODE		CONDUCTOR SIZE (AWG)	NOMINAL LOOP RESISTANCE (2)
STANDARD	SPECIAL (1)		
W-TEX/ALTEXTW-24F-K	W-TEX/ALTEXTW-24F-KK	24 STRANDED	1.361
W-TEX/ALTEXTW-24-K	W-TEX/ALTEXTW-24-KK	24 SOLID	1.490
W-TEX/ALTEXTW-20F-K	W-TEX/ALTEXTW-20F-KK	20 STRANDED	0.538
W-TEX/ALTEXTW-20-K	W-TEX/ALTEXTW-20-KK	20 SOLID	0.589
W-TEX/ALTEXTW-18-K	W-TEX/ALTEXTW-18-KK	18 SOLID	0.376

CALIBRATION: ANSI Type T

ORDERING CODE		CONDUCTOR SIZE (AWG)	NOMINAL LOOP RESISTANCE (2)
STANDARD	SPECIAL (1)		
W-TEX/ALTEXTW-24F-T	W-TEX/ALTEXTW-24F-TT	24 STRANDED	0.701
W-TEX/ALTEXTW-24-T	W-TEX/ALTEXTW-24-TT	24 SOLID	0.768
W-TEX/ALTEXTW-20F-T	W-TEX/ALTEXTW-20F-TT	20 STRANDED	0.277
W-TEX/ALTEXTW-20-T	W-TEX/ALTEXTW-20-TT	20 SOLID	0.304
W-TEX/ALTEXTW-18-T	W-TEX/ALTEXTW-18-TT	18 SOLID	0.194

CALIBRATION: ANSI Type E

ORDERING CODE		CONDUCTOR SIZE (AWG)	NOMINAL LOOP RESISTANCE (2)
STANDARD	SPECIAL (1)		
W-TEX/ALTEXTW-24F-E	W-TEX/ALTEXTW-24F-EE	24 STRANDED	1.639
W-TEX/ALTEXTW-24-E	W-TEX/ALTEXTW-24-EE	24 SOLID	1.795
W-TEX/ALTEXTW-20F-E	W-TEX/ALTEXTW-20F-EE	20 STRANDED	0.648
W-TEX/ALTEXTW-20-E	W-TEX/ALTEXTW-20-EE	20 SOLID	0.709
W-TEX/ALTEXTW-18-E	W-TEX/ALTEXTW-18-EE	18 SOLID	0.453

CALIBRATION: ANSI Type N

ORDERING CODE		CONDUCTOR SIZE (AWG)	NOMINAL LOOP RESISTANCE (2)
STANDARD	SPECIAL (1)		
W-TEX/ALTEXTW-24F-N	W-TEX/ALTEXTW-24F-NN	24 STRANDED	1.808
W-TEX/ALTEXTW-24-N	W-TEX/ALTEXTW-24-NN	24 SOLID	1.980
W-TEX/ALTEXTW-20F-N	W-TEX/ALTEXTW-20F-NN	20 STRANDED	0.715
W-TEX/ALTEXTW-20-N	W-TEX/ALTEXTW-20-NN	20 SOLID	0.783
W-TEX/ALTEXTW-18-N	W-TEX/ALTEXTW-18-NN	18 SOLID	0.500

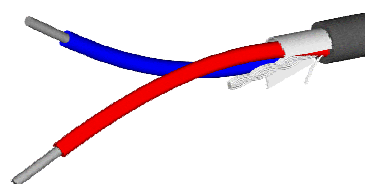
CALIBRATION: ANSI Type SX/RX

ORDERING CODE		CONDUCTOR SIZE (AWG)	NOMINAL LOOP RESISTANCE (2)
STANDARD	SPECIAL (1)		
W-TEX/ALTEX-24F-SX		24 STRANDED	0.091
W-TEX/ALTEX-24-SX		24 SOLID	0.100
W-TEX/ALTEX-20F-SX		20 STRANDED	0.036
W-TEX/ALTEX-20-SX		20 SOLID	0.040
W-TEX/ALTEX-18-SX		18 SOLID	0.025

CALIBRATION: ANSI Type BX

ORDERING CODE		CONDUCTOR SIZE (AWG)	NOMINAL LOOP RESISTANCE (2)
STANDARD	SPECIAL (1)		
W-TEX/ALTEXTW-24F-BX		24 STRANDED	0.227
W-TEX/ALTEXTW-24-BX		24 SOLID	0.248
W-TEX/ALTEXTW-20F-BX		20 STRANDED	0.090
W-TEX/ALTEXTW-20-BX		20 SOLID	0.098
W-TEX/ALTEXTW-18-BX		18 SOLID	0.063

CONDUCTOR SIZE (AWG)	INSULATION THICKNESS	JACKET THICKNESS	NOMINAL DIMENSIONS	APPROX. SHIPPING WT. lbs/1000 Ft. (Kg)
24 STRANDED	.008	.012	.112	13 lbs (5.9 Kg)
24 SOLID	.008	.012	.104	12 lbs (5.4 Kg)
20 STRANDED	.008	.012	.140	20 lbs (9.1 Kg)
20 SOLID	.008	.012	.128	18 lbs (8.2 Kg)
18 SOLID	.008	.015	.152	25 lbs (11.3 Kg)

FEP TEFLON® INSULATED
TYPE W-TEX/ALTEXTW (THERMOCOUPLE GRADE)

TEFLON® (FEP) or Equivalent INSULATION

Individual conductors are insulated with extruded FEP Teflon or equivalent. Conductors are twisted with a polyester backed aluminum tape shield applied with a bare stranded copper drain wire and insulated with extruded FEP Teflon jacket.

PERFORMANCE FEATURES

Excellent low friction resistance, allows easy pulling through conduits
High flexibility
Unaffected by most chemicals
Excellent electrical properties
Twisted and shielded construction eliminates most problems associated with noise interference

APPLICATIONS

Petrochemical Plants
Harsh and Corrosive Environments
Food and Pharmaceutical

CALIBRATION	COLOR CODE (ANSI)			COLOR CODE (IEC)*		
	POSITIVE	NEGATIVE	OVERALL	POSITIVE	NEGATIVE	OVERALL
TYPE J	WHITE	RED	BROWN	BLACK	WHITE	BLACK
TYPE K	YELLOW	RED	BROWN	GREEN	WHITE	GREEN
TYPE T	BLUE	RED	BROWN	BROWN	WHITE	BROWN
TYPE E	PURPLE	RED	BROWN	PURPLE	WHITE	PURPLE
TYPE N	ORANGE	RED	BROWN	PINK	WHITE	PINK
TYPE SX/RX	BLACK	RED	GREEN	ORANGE	WHITE	ORANGE
BX	GRAY	RED	GRAY	RED	GRAY	GRAY

* Add (-IEC) to the end of the ordering code for IEC color coded insulation and jacketed wire.
Example: W-TEX/ALTEXTW-20-J-IEC

INITIAL CALIBRATION TOLERANCES Per ANSI MC96.1 and ASTM E230 (°F)					
TEMPERATURE RANGE	STANDARD		SPECIAL		
	CALIBRATION	TOLERANCE	CALIBRATION	TOLERANCE	
32 to 1400°F	TYPE J	±4.0°F or ±.75%*	TYPE JJ	±2.0°F or ±.4%*	
32 to 2300°F	TYPE K	±4.0°F or ±.75%*	TYPE KK	±2.0°F or ±.4%*	
-320 to 32°F	TYPE T**	±1.8°F or ±1.5%**	TYPE TT**	±0.9°F or ±.8%**	
32 to 700°F		±1.8°F or ±.75%*		±0.9°F or ±.4%*	
32 to 1600°F	TYPE E	±3.0°F or ±.50%*	TYPE EE	±1.8°F or ±.5%*	
32 to 2300°F	TYPE N	±4.0°F or ±.75%*	TYPE NN	±2.0°F or ±.4%*	
32 to 400°F	TYPE SX, RX***	±9.0°F			
32 to 212°F	TYPE BX***	±6.7°F			

*Whichever is greater

**Values refer to specially selected cryogenic material. Special limits tolerance is based on limited data, and should only be used as a guide in establishing appropriate working tolerances.

*** Type S and R thermocouples utilize the same extension wire.

**** Copper versus copper can be used as extension wire for type B thermocouples if transition temperature is at or below 212°F for a maximum error of 6.7°F. Above 212°F, PCLW30-6 alloy (or equivalent) should be used as the positive extension wire with copper as the negative extension wire. (Note: PCLW30-6 or equivalent can also be used in the 122°F to 212°F temperature range, which will reduce the error to -0/+4°F.)

Notes:

- (1) Meets or exceeds Special Initial Calibration Tolerances per ANSI MC96.1-1982 and ASTM E230-1993.
- (2) Nominal resistance in OHMS per double feet at 68°F (20°C).



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SECTION WIRE

FEP TEFLON® INSULATED
SHIELDED WIRE

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Doc. No.: TE-CO010109-WIRE-040

CALIBRATION: ANSI Type J

ORDERING CODE		CONDUCTOR SIZE (AWG)	NOMINAL LOOP RESISTANCE (2)
STANDARD	SPECIAL (1)		
W-TF/TF-24F-J	W-TF/TF-24F-JJ	24 STRANDED	0.848
W-TF/TF-24-J	W-TF/TF-24-JJ	24 SOLID	0.928
W-TF/TF-20F-J	W-TF/TF-20F-JJ	20 STRANDED	0.335
W-TF/TF-20-J	W-TF/TF-20-JJ	20 SOLID	0.367
W-TF/TF-18-J	W-TF/TF-18-JJ	18 SOLID	0.234

CALIBRATION: ANSI Type K

ORDERING CODE		CONDUCTOR SIZE (AWG)	NOMINAL LOOP RESISTANCE (2)
STANDARD	SPECIAL (1)		
W-TF/TF-24F-K	W-TF/TF-24F-KK	24 STRANDED	1.361
W-TF/TF-24-K	W-TF/TF-24-KK	24 SOLID	1.490
W-TF/TF-20F-K	W-TF/TF-20F-KK	20 STRANDED	0.538
W-TF/TF-20-K	W-TF/TF-20-KK	20 SOLID	0.589
W-TF/TF-18-K	W-TF/TF-18-KK	18 SOLID	0.376

CALIBRATION: ANSI Type T

ORDERING CODE		CONDUCTOR SIZE (AWG)	NOMINAL LOOP RESISTANCE (2)
STANDARD	SPECIAL (1)		
W-TF/TF-24F-T	W-TF/TF-24F-TT	24 STRANDED	0.701
W-TF/TF-24-T	W-TF/TF-24-TT	24 SOLID	0.768
W-TF/TF-20F-T	W-TF/TF-20F-TT	20 STRANDED	0.277
W-TF/TF-20-T	W-TF/TF-20-TT	20 SOLID	0.304
W-TF/TF-18-T	W-TF/TF-18-TT	18 SOLID	0.194

CALIBRATION: ANSI Type E

ORDERING CODE		CONDUCTOR SIZE (AWG)	NOMINAL LOOP RESISTANCE (2)
STANDARD	SPECIAL (1)		
W-TF/TF-24F-E	W-TF/TF-24F-EE	24 STRANDED	1.639
W-TF/TF-24-E	W-TF/TF-24-EE	24 SOLID	1.795
W-TF/TF-20F-E	W-TF/TF-20F-EE	20 STRANDED	0.648
W-TF/TF-20-E	W-TF/TF-20-EE	20 SOLID	0.709
W-TF/TF-18-E	W-TF/TF-18-EE	18 SOLID	0.453

CALIBRATION: ANSI Type N

ORDERING CODE		CONDUCTOR SIZE (AWG)	NOMINAL LOOP RESISTANCE (2)
STANDARD	SPECIAL (1)		
W-TF/TF-24F-N	W-TF/TF-24F-NN	24 STRANDED	1.808
W-TF/TF-24-N	W-TF/TF-24-NN	24 SOLID	1.980
W-TF/TF-20F-N	W-TF/TF-20F-NN	20 STRANDED	0.715
W-TF/TF-20-N	W-TF/TF-20-NN	20 SOLID	0.783
W-TF/TF-18-N	W-TF/TF-18-NN	18 SOLID	0.500

CALIBRATION: ANSI Type SX/RX

ORDERING CODE		CONDUCTOR SIZE (AWG)	NOMINAL LOOP RESISTANCE (2)
STANDARD	SPECIAL (1)		
W-TF/TF-24F-SX		24 STRANDED	0.091
W-TF/TF-24-SX		24 SOLID	0.100
W-TF/TF-20F-SX		20 STRANDED	0.036
W-TF/TF-20-SX		20 SOLID	0.040
W-TF/TF-18-SX		18 SOLID	0.025

CALIBRATION: ANSI Type BX

ORDERING CODE		CONDUCTOR SIZE (AWG)	NOMINAL LOOP RESISTANCE (2)
STANDARD	SPECIAL (1)		
W-TF/TF-24F-BX		24 STRANDED	0.227
W-TF/TF-24-BX		24 SOLID	0.248
W-TF/TF-20F-BX		20 STRANDED	0.090
W-TF/TF-20-BX		20 SOLID	0.098
W-TF/TF-18-BX		18 SOLID	0.063

CONDUCTOR SIZE (AWG)	INSULATION THICKNESS	JACKET THICKNESS	NOMINAL DIMENSIONS	APPROX. SHIPPING WT. lbs/1000 Ft. (Kg)
24 STRANDED	.010	.012	.064/.120	7 lbs (3.2 Kg)
24 SOLID	.010	.012	.060/.112	6 lbs (2.7 Kg)
20 STRANDED	.010	.012	.078/.148	11 lbs (5.0 Kg)
20 SOLID	.010	.012	.072/.136	9 lbs (4.1 Kg)
18 SOLID	.010	.012	.080/.152	15 lbs (6.8 Kg)



TFE TEFLON® INSULATED TYPE W-TF/TF (THERMOCOUPLE GRADE)

TEFLON® (TFE) or Equivalent INSULATION

Heat fused Teflon tape is spiral wrapped over individual conductors forming a homogeneous layer of insulation. Conductors are laid parallel and jacketed using the same process. This construction provides all the advantages of extruded Teflon with a higher temperature rating.

PERFORMANCE FEATURES

Excellent low friction resistance, allows easy pulling through conduits
High flexibility
Unaffected by most chemicals
Excellent Electrical Properties

APPLICATIONS

Petrochemical Plants
Harsh and Corrosive Environments
Food and Pharmaceutical

CALIBRATION	COLOR CODE (ANSI)			COLOR CODE (IEC)*		
	POSITIVE	NEGATIVE	OVERALL	POSITIVE	NEGATIVE	OVERALL
TYPE J	WHITE	RED	BROWN	BLACK	WHITE	BLACK
TYPE K	YELLOW	RED	BROWN	GREEN	WHITE	GREEN
TYPE T	BLUE	RED	BROWN	BROWN	WHITE	BROWN
TYPE E	PURPLE	RED	BROWN	PURPLE	WHITE	PURPLE
TYPE N	ORANGE	RED	BROWN	PINK	WHITE	PINK
TYPE SX/RX	BLACK	RED	GREEN	ORANGE	WHITE	ORANGE
BX	GRAY	RED	GRAY	RED	GRAY	GRAY

* Add (-IEC) to the end of the ordering code for IEC color coded insulation and jacketed wire.

Example: W-TF/TF-20-J-IEC

INITIAL CALIBRATION TOLERANCES Per ANSI MC96.1 and ASTM E230 (°F)				
TEMPERATURE RANGE	STANDARD		SPECIAL	
	CALIBRATION	TOLERANCE	CALIBRATION	TOLERANCE
32 to 1400°F	TYPE J	±4.0°F or ±.75%*	TYPE JJ	±2.0°F or ±.4%*
32 to 2300°F	TYPE K	±4.0°F or ±.75%*	TYPE KK	±2.0°F or ±.4%*
-320 to 32°F	TYPE T**	±1.8°F or ±1.5%**	TYPE TT**	±0.9°F or ±.8%**
32 to 700°F		±1.8°F or ±.75%*		±0.9°F or ±.4%*
32 to 1600°F	TYPE E	±3.0°F or ±.50%*	TYPE EE	±1.8°F or ±.5%*
32 to 2300°F	TYPE N	±4.0°F or ±.75%*	TYPE NN	±2.0°F or ±.4%*
32 to 400°F	TYPE SX, RX***	±9.0°F		
32 to 212°F	TYPE BX***	±6.7°F		

*Whichever is greater

**Values refer to specially selected cryogenic material. Special limits tolerance is based on limited data, and should only be used as a guide in establishing appropriate working tolerances.

*** Type S and R thermocouples utilize the same extension wire.

**** Copper versus copper can be used as extension wire for type B thermocouples if transition temperature is at or below 212°F for a maximum error of 6.7°F. Above 212°F, PCLW30-6 alloy (or equivalent) should be used as the positive extension wire with copper as the negative extension wire. (Note: PCLW30-6 or equivalent can also be used in the 122°F to 212°F temperature range, which will reduce the error to -0/+4°F.)

Notes:

- (1) Meets or exceeds Special Initial Calibration Tolerances per ANSI MC96.1-1982 and ASTM E230-1993.
- (2) Nominal resistance in OHMS per double feet at 68°F (20°C).



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SECTION WIRE

TFE TEFLON® INSULATED WIRE

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Doc. No.: TE-CO010109-WIRE-050

CALIBRATION: ANSI Type J

ORDERING CODE		CONDUCTOR SIZE (AWG)	NOMINAL LOOP RESISTANCE (2)
STANDARD	SPECIAL (1)		
W-PFA/PFA-24F-J	W-PFA/PFA-24F-JJ	24 STRANDED	0.848
W-PFA/PFA-24-J	W-PFA/PFA-24-KK	24 SOLID	0.928
W-PFA/PFA-20F-J	W-PFA/PFA-20F-JJ	20 STRANDED	0.335
W-PFA/PFA-20-J	W-PFA/PFA-20-KK	20 SOLID	0.367
W-PFA/PFA-18-J	W-PFA/PFA-18-KK	18 SOLID	0.234

CALIBRATION: ANSI Type K

ORDERING CODE		CONDUCTOR SIZE (AWG)	NOMINAL LOOP RESISTANCE (2)
STANDARD	SPECIAL (1)		
W-PFA/PFA-24F-K	W-PFA/PFA-24F-KK	24 STRANDED	1.361
W-PFA/PFA-24-K	W-PFA/PFA-24-KK	24 SOLID	1.490
W-PFA/PFA-20F-K	W-PFA/PFA-20F-KK	20 STRANDED	0.538
W-PFA/PFA-20-K	W-PFA/PFA-20-KK	20 SOLID	0.589
W-PFA/PFA-18-K	W-PFA/PFA-18-KK	18 SOLID	0.376

CALIBRATION: ANSI Type T

ORDERING CODE		CONDUCTOR SIZE (AWG)	NOMINAL LOOP RESISTANCE (2)
STANDARD	SPECIAL (1)		
W-PFA/PFA-24F-T	W-PFA/PFA-24F-TT	24 STRANDED	0.701
W-PFA/PFA-24-T	W-PFA/PFA-24-TT	24 SOLID	0.768
W-PFA/PFA-20F-T	W-PFA/PFA-20F-TT	20 STRANDED	0.277
W-PFA/PFA-20-T	W-PFA/PFA-20-TT	20 SOLID	0.304
W-PFA/PFA-18-T	W-PFA/PFA-18-TT	18 SOLID	0.194

CALIBRATION: ANSI Type E

ORDERING CODE		CONDUCTOR SIZE (AWG)	NOMINAL LOOP RESISTANCE (2)
STANDARD	SPECIAL (1)		
W-PFA/PFA-24F-E	W-PFA/PFA-24F-EE	24 STRANDED	1.639
W-PFA/PFA-24-E	W-PFA/PFA-24-EE	24 SOLID	1.795
W-PFA/PFA-20F-E	W-PFA/PFA-20F-EE	20 STRANDED	0.648
W-PFA/PFA-20-E	W-PFA/PFA-20-EE	20 SOLID	0.709
W-PFA/PFA-18-E	W-PFA/PFA-18-EE	18 SOLID	0.453

CALIBRATION: ANSI Type N

ORDERING CODE		CONDUCTOR SIZE (AWG)	NOMINAL LOOP RESISTANCE (2)
STANDARD	SPECIAL (1)		
W-PFA/PFA-24F-N	W-PFA/PFA-24F-NN	24 STRANDED	1.808
W-PFA/PFA-24-N	W-PFA/PFA-24-NN	24 SOLID	1.980
W-PFA/PFA-20F-N	W-PFA/PFA-20F-NN	20 STRANDED	0.715
W-PFA/PFA-20-N	W-PFA/PFA-20-NN	20 SOLID	0.783
W-PFA/PFA-18-N	W-PFA/PFA-18-NN	18 SOLID	0.500

CALIBRATION: ANSI Type SX/RX

ORDERING CODE		CONDUCTOR SIZE (AWG)	NOMINAL LOOP RESISTANCE (2)
STANDARD	SPECIAL (1)		
W-PFA/PFA-24F-SX		24 STRANDED	0.091
W-PFA/PFA-24-SX		24 SOLID	0.100
W-PFA/PFA-20F-SX		20 STRANDED	0.036
W-PFA/PFA-20-SX		20 SOLID	0.040
W-PFA/PFA-18-SX		18 SOLID	0.025

CALIBRATION: ANSI Type BX

ORDERING CODE		CONDUCTOR SIZE (AWG)	NOMINAL LOOP RESISTANCE (2)
STANDARD	SPECIAL (1)		
W-PFA/PFA-24F-BX		24 STRANDED	0.227
W-PFA/PFA-24-BX		24 SOLID	0.248
W-PFA/PFA-20F-BX		20 STRANDED	0.090
W-PFA/PFA-20-BX		20 SOLID	0.098
W-PFA/PFA-18-BX		18 SOLID	0.063

CONDUCTOR SIZE (AWG)	INSULATION THICKNESS	JACKET THICKNESS	NOMINAL DIMENSIONS	APPROX. SHIPPING WT. lbs/1000 Ft. (Kg)
24 STRANDED	.008	.010	.056/.108	9 lbs (4.1 Kg)
24 SOLID	.008	.010	.052/.100	8 lbs (3.6 Kg)
20 STRANDED	.008	.010	.070/.136	14 lbs (6.4 Kg)
20 SOLID	.008	.010	.064/.124	12 lbs (5.4 Kg)
18 SOLID	.008	.010	.072/.140	18 lbs (8.2 Kg)



PFA TEFLON® INSULATED TYPE W-PFA/PFA (THERMOCOUPLE GRADE)

TEFLON® (PFA) or Equivalent INSULATION

Individual conductors are insulated with extruded PFA Teflon or equivalent. Conductors are laid parallel and insulated with extruded PFA Teflon jacket. This provides the highest temperature of extruded insulations. Smooth finish is ideal for food industry cleaning requirements.

PERFORMANCE FEATURES

Excellent low friction resistance, allows easy pulling through conduits
High flexibility
Unaffected by most chemicals
Excellent Electrical Properties

APPLICATIONS

Petrochemical Plants
Harsh and Corrosive Environments
Food and Pharmaceutical

CALIBRATION	COLOR CODE (ANSI)			COLOR CODE (IEC)*		
	POSITIVE	NEGATIVE	OVERALL	POSITIVE	NEGATIVE	OVERALL
TYPE J	WHITE	RED	BROWN	BLACK	WHITE	BLACK
TYPE K	YELLOW	RED	BROWN	GREEN	WHITE	GREEN
TYPE T	BLUE	RED	BROWN	BROWN	WHITE	BROWN
TYPE E	PURPLE	RED	BROWN	PURPLE	WHITE	PURPLE
TYPE N	ORANGE	RED	BROWN	PINK	WHITE	PINK
TYPE SX/RX	BLACK	RED	GREEN	ORANGE	WHITE	ORANGE
BX	GRAY	RED	GRAY	RED	GRAY	GRAY

* Add (-IEC) to the end of the ordering code for IEC color coded insulation and jacketed wire.
Example: W-PFA/PFA-20-J-IEC

INITIAL CALIBRATION TOLERANCES Per ANSI MC96.1 and ASTM E230 (°F)					
TEMPERATURE RANGE	STANDARD		SPECIAL		
	CALIBRATION	TOLERANCE	CALIBRATION	TOLERANCE	
32 to 1400°F	TYPE J	±4.0°F or ±.75%*	TYPE JJ	±2.0°F or ±.4%*	
32 to 2300°F	TYPE K	±4.0°F or ±.75%*	TYPE KK	±2.0°F or ±.4%*	
-320 to 32°F	TYPE T**	±1.8°F or ±1.5%**	TYPE TT**	±0.9°F or ±.8%**	
32 to 700°F		±1.8°F or ±.75%*		±0.9°F or ±.4%*	
32 to 1600°F	TYPE E	±3.0°F or ±.50%*	TYPE EE	±1.8°F or ±.5%*	
32 to 2300°F	TYPE N	±4.0°F or ±.75%*	TYPE NN	±2.0°F or ±.4%*	
32 to 400°F	TYPE SX, RX***	±9.0°F			
32 to 212°F	TYPE BX***	±6.7°F			

*Whichever is greater

**Values refer to specially selected cryogenic material. Special limits tolerance is based on limited data, and should only be used as a guide in establishing appropriate working tolerances.

*** Type S and R thermocouples utilize the same extension wire.

**** Copper versus copper can be used as extension wire for type B thermocouples if transition temperature is at or below 212°F for a maximum error of 6.7°F. Above 212°F, PCLW30-6 alloy (or equivalent) should be used as the positive extension wire with copper as the negative extension wire. (Note: PCLW30-6 or equivalent can also be used in the 122°F to 212°F temperature range, which will reduce the error to -0/+4°F.)

Notes:

- (1) Meets or exceeds Special Initial Calibration Tolerances per ANSI MC96.1-1982 and ASTM E230-1993.
- (2) Nominal resistance in OHMS per double feet at 68°F (20°C).



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SECTION WIRE

PFA TEFLON® INSULATED WIRE

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Doc. No.: TE-CO010109-WIRE-060

CALIBRATION: ANSI Type J

ORDERING CODE		CONDUCTOR SIZE (AWG)	NOMINAL LOOP RESISTANCE (2)
STANDARD	SPECIAL (1)		
W-K/K-24F-J	W-K/K-24F-JJ	24 STRANDED	0.848
W-K/K-24-J	W-K/K-24-JJ	24 SOLID	0.928
W-K/K-20F-J	W-K/K-20F-JJ	20 STRANDED	0.335
W-K/K-20-J	W-K/K-20-JJ	20 SOLID	0.367
W-K/K-18-J	W-K/K-18-JJ	18 SOLID	0.234



CALIBRATION: ANSI Type K

ORDERING CODE		CONDUCTOR SIZE (AWG)	NOMINAL LOOP RESISTANCE (2)
STANDARD	SPECIAL (1)		
W-K/K-24F-K	W-K/K-24F-KK	24 STRANDED	1.361
W-K/K-24-K	W-K/K-24-KK	24 SOLID	1.490
W-K/K-20F-K	W-K/K-20F-KK	20 STRANDED	0.538
W-K/K-20-K	W-K/K-20-KK	20 SOLID	0.589
W-K/K-18-K	W-K/K-18-KK	18 SOLID	0.376

CALIBRATION: ANSI Type T

ORDERING CODE		CONDUCTOR SIZE (AWG)	NOMINAL LOOP RESISTANCE (2)
STANDARD	SPECIAL (1)		
W-K/K-24F-T	W-K/K-24F-TT	24 STRANDED	0.701
W-K/K-24-T	W-K/K-24-TT	24 SOLID	0.768
W-K/K-20F-T	W-K/K-20F-TT	20 STRANDED	0.277
W-K/K-20-T	W-K/K-20-TT	20 SOLID	0.304
W-K/K-18-T	W-K/K-18-TT	18 SOLID	0.194

CALIBRATION: ANSI Type E

ORDERING CODE		CONDUCTOR SIZE (AWG)	NOMINAL LOOP RESISTANCE (2)
STANDARD	SPECIAL (1)		
W-K/K-24F-E	W-K/K-24F-EE	24 STRANDED	1.639
W-K/K-24-E	W-K/K-24-EE	24 SOLID	1.795
W-K/K-20F-E	W-K/K-20F-EE	20 STRANDED	0.648
W-K/K-20-E	W-K/K-20-EE	20 SOLID	0.709
W-K/K-18-E	W-K/K-18-EE	18 SOLID	0.453

CALIBRATION: ANSI Type N

ORDERING CODE		CONDUCTOR SIZE (AWG)	NOMINAL LOOP RESISTANCE (2)
STANDARD	SPECIAL (1)		
W-K/K-24F-N	W-K/K-24F-NN	24 STRANDED	1.808
W-K/K-24-N	W-K/K-24-NN	24 SOLID	1.980
W-K/K-20F-N	W-K/K-20F-NN	20 STRANDED	0.715
W-K/K-20-N	W-K/K-20-NN	20 SOLID	0.783
W-K/K-18-N	W-K/K-18-NN	18 SOLID	0.500

CALIBRATION: ANSI Type SX/RX

ORDERING CODE		CONDUCTOR SIZE (AWG)	NOMINAL LOOP RESISTANCE (2)
STANDARD	SPECIAL (1)		
W-K/K-24F-SX		24 STRANDED	0.091
W-K/K-24-SX		24 SOLID	0.100
W-K/K-20F-SX		20 STRANDED	0.036
W-K/K-20-SX		20 SOLID	0.040
W-K/K-18-SX		18 SOLID	0.025

CALIBRATION: ANSI Type BX

ORDERING CODE		CONDUCTOR SIZE (AWG)	NOMINAL LOOP RESISTANCE (2)
STANDARD	SPECIAL (1)		
W-K/K-24F-BX		24 STRANDED	0.227
W-K/K-24-BX		24 SOLID	0.248
W-K/K-20F-BX		20 STRANDED	0.090
W-K/K-20-BX		20 SOLID	0.098
W-K/K-18-BX		18 SOLID	0.063

CONDUCTOR SIZE (AWG)	INSULATION THICKNESS	JACKET THICKNESS	NOMINAL DIMENSIONS	APPROX. SHIPPING WT. lbs/1000 Ft. (Kg)
24 STRANDED	.005	.005	.044/.078	6 lbs (2.7 Kg)
24 SOLID	.005	.005	.040/.070	5 lbs (2.3 Kg)
20 STRANDED	.005	.005	.058/.106	9 lbs (4.1 Kg)
20 SOLID	.005	.005	.052/.094	8 lbs (3.6 Kg)
18 SOLID	.005	.005	.060/.110	14 lbs (6.4 Kg)

KAPTON® INSULATED TYPE W-K/K (THERMOCOUPLE GRADE)

KAPTON® or Equivalent INSULATION

Heat fused polyimide tape is spiral wrapped over individual conductors and coated with a polyimide varnish color coded to ANSI or IEC standards. Conductors are laid parallel and jacketed using the same process.

PERFORMANCE FEATURES

Excellent abrasion, moisture, and chemical resistance
Continuous use at temperatures up to 600°F (315°C)

APPLICATIONS

Aerospace
Petrochemical Plants
Plastics
Cryogenic Applications

CALIBRATION	COLOR CODE (ANSI)			COLOR CODE (IEC)*		
	POSITIVE	NEGATIVE	OVERALL	POSITIVE	NEGATIVE	OVERALL
TYPE J	WHITE	RED	BROWN	BLACK	WHITE	BLACK
TYPE K	YELLOW	RED	BROWN	GREEN	WHITE	GREEN
TYPE T	BLUE	RED	BROWN	BROWN	WHITE	BROWN
TYPE E	PURPLE	RED	BROWN	PURPLE	WHITE	PURPLE
TYPE N	ORANGE	RED	BROWN	PINK	WHITE	PINK
TYPE SX/RX	BLACK	RED	GREEN	ORANGE	WHITE	ORANGE
BX	GRAY	RED	GRAY	RED	GRAY	GRAY

* Add (-IEC) to the end of the ordering code for IEC color coded insulation and jacketed wire.

Example: W-K/K-20-J-IEC

INITIAL CALIBRATION TOLERANCES Per ANSI MC96.1 and ASTM E230 (°F)				
TEMPERATURE RANGE	STANDARD		SPECIAL	
	CALIBRATION	TOLERANCE	CALIBRATION	TOLERANCE
32 to 1400°F	TYPE J	±4.0°F or ±.75%*	TYPE JJ	±2.0°F or ±.4%*
32 to 2300°F	TYPE K	±4.0°F or ±.75%*	TYPE KK	±2.0°F or ±.4%*
-320 to 32°F	TYPE T**	±1.8°F or ±1.5%**	TYPE TT**	±0.9°F or ±.8%**
32 to 700°F		±1.8°F or ±.75%*		±0.9°F or ±.4%*
32 to 1600°F	TYPE E	±3.0°F or ±.50%*	TYPE EE	±1.8°F or ±.5%*
32 to 2300°F	TYPE N	±4.0°F or ±.75%*	TYPE NN	±2.0°F or ±.4%*
32 to 400°F	TYPE SX, RX***	±9.0°F		
32 to 212°F	TYPE BX***	±6.7°F		

*Whichever is greater

**Values refer to specially selected cryogenic material. Special limits tolerance is based on limited data, and should only be used as a guide in establishing appropriate working tolerances.

*** Type S and R thermocouples utilize the same extension wire.

**** Copper versus copper can be used as extension wire for type B thermocouples if transition temperature is at or below 212°F for a maximum error of 6.7°F. Above 212°F, PCLW30-6 alloy (or equivalent) should be used as the positive extension wire with copper as the negative extension wire. (Note: PCLW30-6 or equivalent can also be used in the 122°F to 212°F temperature range, which will reduce the error to -0/+4°F.)

Notes:

- (1) Meets or exceeds Special Initial Calibration Tolerances per ANSI MC96.1-1982 and ASTM E230-1993.
- (2) Nominal resistance in OHMS per double feet at 68°F (20°C).



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SECTION WIRE

KAPTON® (POLYIMIDE) INSULATED WIRE

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Doc. No.: TE-CO010109-WIRE-070

CALIBRATION: ANSI Type J

ORDERING CODE		CONDUCTOR SIZE (AWG)	NOMINAL LOOP RESISTANCE (2)
STANDARD	SPECIAL (1)		
W-G/G-24F-J	W-G/G-24F-JJ	24 STRANDED	0.848
W-G/G-24-J	W-G/G-24-JJ	24 SOLID	0.928
W-G/G-20F-J	W-G/G-20F-JJ	20 STRANDED	0.335
W-G/G-20-J	W-G/G-20-JJ	20 SOLID	0.367
W-G/G-18-J	W-G/G-18-JJ	18 SOLID	0.234

CALIBRATION: ANSI Type K

ORDERING CODE		CONDUCTOR SIZE (AWG)	NOMINAL LOOP RESISTANCE (2)
STANDARD	SPECIAL (1)		
W-G/G-24F-K	W-G/G-24F-KK	24 STRANDED	1.361
W-G/G-24-K	W-G/G-24-KK	24 SOLID	1.490
W-G/G-20F-K	W-G/G-20F-KK	20 STRANDED	0.538
W-G/G-20-K	W-G/G-20-KK	20 SOLID	0.589
W-G/G-18-K	W-G/G-18-KK	18 SOLID	0.376

CALIBRATION: ANSI Type T

ORDERING CODE		CONDUCTOR SIZE (AWG)	NOMINAL LOOP RESISTANCE (2)
STANDARD	SPECIAL (1)		
W-G/G-24F-T	W-G/G-24F-TT	24 STRANDED	0.701
W-G/G-24-T	W-G/G-24-TT	24 SOLID	0.768
W-G/G-20F-T	W-G/G-20F-TT	20 STRANDED	0.277
W-G/G-20-T	W-G/G-20-TT	20 SOLID	0.304
W-G/G-18-T	W-G/G-18-TT	18 SOLID	0.194

CALIBRATION: ANSI Type E

ORDERING CODE		CONDUCTOR SIZE (AWG)	NOMINAL LOOP RESISTANCE (2)
STANDARD	SPECIAL (1)		
W-G/G-24F-E	W-G/G-24F-EE	24 STRANDED	1.639
W-G/G-24-E	W-G/G-24-EE	24 SOLID	1.795
W-G/G-20F-E	W-G/G-20F-EE	20 STRANDED	0.648
W-G/G-20-E	W-G/G-20-EE	20 SOLID	0.709
W-G/G-18-E	W-G/G-18-EE	18 SOLID	0.453

CALIBRATION: ANSI Type N

ORDERING CODE		CONDUCTOR SIZE (AWG)	NOMINAL LOOP RESISTANCE (2)
STANDARD	SPECIAL (1)		
W-G/G-24F-N	W-G/G-24F-NN	24 STRANDED	1.808
W-G/G-24-N	W-G/G-24-NN	24 SOLID	1.980
W-G/G-20F-N	W-G/G-20F-NN	20 STRANDED	0.715
W-G/G-20-N	W-G/G-20-NN	20 SOLID	0.783
W-G/G-18-N	W-G/G-18-NN	18 SOLID	0.500

CALIBRATION: ANSI Type SX/RX

ORDERING CODE		CONDUCTOR SIZE (AWG)	NOMINAL LOOP RESISTANCE (2)
STANDARD	SPECIAL (1)		
W-G/G-24F-SX		24 STRANDED	0.091
W-G/G-24-SX		24 SOLID	0.100
W-G/G-20F-SX		20 STRANDED	0.036
W-G/G-20-SX		20 SOLID	0.040
W-G/G-18-SX		18 SOLID	0.025

CALIBRATION: ANSI Type BX

ORDERING CODE		CONDUCTOR SIZE (AWG)	NOMINAL LOOP RESISTANCE (2)
STANDARD	SPECIAL (1)		
W-G/G-24F-BX		24 STRANDED	0.227
W-G/G-24-BX		24 SOLID	0.248
W-G/G-20F-BX		20 STRANDED	0.090
W-G/G-20-BX		20 SOLID	0.098
W-G/G-18-BX		18 SOLID	0.063

CONDUCTOR SIZE (AWG)	INSULATION THICKNESS	JACKET THICKNESS	NOMINAL DIMENSIONS	APPROX. SHIPPING WT. lbs/1000 Ft. (Kg)
24 STRANDED	.005	.006	.040/.076	8 lbs (3.6 Kg)
24 SOLID	.005	.006	.044/.084	7 lbs (3.2 Kg)
20 STRANDED	.005	.006	.052/.100	10 lbs (4.5 Kg)
20 SOLID	.005	.006	.058/.112	9 lbs (4.1 Kg)
18 SOLID	.007	.008	.068/.128	17 lbs (7.7 Kg)



FIBERGLASS INSULATED TYPE W-G/G (THERMOCOUPLE GRADE)

FIBERGLASS INSULATION

Individual conductors are insulated with a fiberglass braid which is saturated with a resin to improve abrasion resistance and reduce fraying. Conductors are laid parallel and covered with an overall fiberglass jacket and a final impregnation of resin.

PERFORMANCE FEATURES

Designed for continuous use to 950° F (510° C), intermittent to 1200° F (650° C).

Good moisture, chemical and abrasion resistance, high temperature stability

APPLICATIONS

Heat Treating
Aircraft Bonding
Foundries and Steel Mills
Ovens

CALIBRATION	COLOR CODE (ANSI)			COLOR CODE (IEC)*		
	POSITIVE	NEGATIVE	OVERALL	POSITIVE	NEGATIVE	OVERALL
TYPE J	WHITE	RED	BROWN	BLACK	WHITE	BLACK
TYPE K	YELLOW	RED	BROWN	GREEN	WHITE	GREEN
TYPE T	BLUE	RED	BROWN	BROWN	WHITE	BROWN
TYPE E	PURPLE	RED	BROWN	PURPLE	WHITE	PURPLE
TYPE N	ORANGE	RED	BROWN	PINK	WHITE	PINK
TYPE SX/RX	BLACK	RED	GREEN	ORANGE	WHITE	ORANGE
BX	GRAY	RED	GRAY	RED	GRAY	GRAY

* Add (-IEC) to the end of the ordering code for IEC color coded insulation and jacketed wire.

Example: W-G/G-20-J-IEC

INITIAL CALIBRATION TOLERANCES Per ANSI MC96.1 and ASTM E230 (°F)				
TEMPERATURE RANGE	STANDARD		SPECIAL	
	CALIBRATION	TOLERANCE	CALIBRATION	TOLERANCE
32 to 1400°F	TYPE J	±4.0°F or ±.75%*	TYPE JJ	±2.0°F or ±.4%*
32 to 2300°F	TYPE K	±4.0°F or ±.75%*	TYPE KK	±2.0°F or ±.4%*
-320 to 32°F	TYPE T**	±1.8°F or ±1.5%**	TYPE TT**	±0.9°F or ±.8%**
32 to 700°F		±1.8°F or ±.75%*		±0.9°F or ±.4%*
32 to 1600°F	TYPE E	±3.0°F or ±.50%*	TYPE EE	±1.8°F or ±.5%*
32 to 2300°F	TYPE N	±4.0°F or ±.75%*	TYPE NN	±2.0°F or ±.4%*
32 to 400°F	TYPE SX, RX***	±9.0°F		
32 to 212°F	TYPE BX***	±6.7°F		

*Whichever is greater

**Values refer to specially selected cryogenic material. Special limits tolerance is based on limited data, and should only be used as a guide in establishing appropriate working tolerances.

*** Type S and R thermocouples utilize the same extension wire.

**** Copper versus copper can be used as extension wire for type B thermocouples if transition temperature is at or below 212°F for a maximum error of 6.7°F. Above 212°F, PCLW30-6 alloy (or equivalent) should be used as the positive extension wire with copper as the negative extension wire. (Note: PCLW30-6 or equivalent can also be used in the 122°F to 212°F temperature range, which will reduce the error to -0/+4°F.)

Notes:

- (1) Meets or exceeds Special Initial Calibration Tolerances per ANSI MC96.1-1982 and ASTM E230-1993.
- (2) Nominal resistance in OHMS per double feet at 68°F (20°C).



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SECTION WIRE FIBERGLASS INSULATED WIRE

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Doc. No.: TE-CO010109-WIRE-080



HIGH TEMPERATURE FIBERGLASS INSULATED TYPE W-Q/Q (THERMOCOUPLE GRADE)

HIGH TEMPERATURE FIBERGLASS INSULATION

Individual conductors are insulated with a high temperature fiberglass braid which is saturated with a resin to improve abrasion resistance and reduce fraying. Conductors are laid parallel and covered with an overall high temperature fiberglass jacket and a final impregnation of resin.

CALIBRATION: ANSI Type J

ORDERING CODE		CONDUCTOR SIZE (AWG)	NOMINAL LOOP RESISTANCE (2)
STANDARD	SPECIAL (1)		
W-Q/Q-24F-J	W-Q/Q-24F-JJ	24 STRANDED	0.848
W-Q/Q-24-J	W-Q/Q-24-JJ	24 SOLID	0.928
W-Q/Q-20F-J	W-Q/Q-20F-JJ	20 STRANDED	0.335
W-Q/Q-20-J	W-Q/Q-20-JJ	20 SOLID	0.367
W-Q/Q-18-J	W-Q/Q-18-JJ	18 SOLID	0.234

PERFORMANCE FEATURES

Designed for continuous use to 1200° F (650° C),
intermittent to 1500° F (815° C).

High thermal endurance

High tensile strength

APPLICATIONS

Aluminum and Steel Industry

Heat Treating

Furnace Temperature Surveys

CALIBRATION: ANSI Type K

ORDERING CODE		CONDUCTOR SIZE (AWG)	NOMINAL LOOP RESISTANCE (2)
STANDARD	SPECIAL (1)		
W-Q/Q-24F-K	W-Q/Q-24F-KK	24 STRANDED	1.361
W-Q/Q-24-K	W-Q/Q-24-KK	24 SOLID	1.490
W-Q/Q-20F-K	W-Q/Q-20F-KK	20 STRANDED	0.538
W-Q/Q-20-K	W-Q/Q-20-KK	20 SOLID	0.589
W-Q/Q-18-K	W-Q/Q-18-KK	18 SOLID	0.376

CALIBRATION	COLOR CODE (ANSI)			COLOR CODE (IEC)*		
	POSITIVE	NEGATIVE	OVERALL	POSITIVE	NEGATIVE	OVERALL
TYPE J	WHITE	RED	BROWN	BLACK	WHITE	WHITE
TYPE K	YELLOW	RED	BROWN	GREEN	WHITE	WHITE
TYPE E	PURPLE	RED	BROWN	PURPLE	WHITE	WHITE
TYPE N	ORANGE	RED	BROWN	PINK	WHITE	PINK

* Add (-IEC) to the end of the ordering code for IEC color coded insulation and jacketed wire.
Example: W-Q/Q-20-J-IEC

CALIBRATION: ANSI Type E

ORDERING CODE		CONDUCTOR SIZE (AWG)	NOMINAL LOOP RESISTANCE (2)
STANDARD	SPECIAL (1)		
W-Q/Q-24F-E	W-Q/Q-24F-EE	24 STRANDED	1.639
W-Q/Q-24-E	W-Q/Q-24-EE	24 SOLID	1.795
W-Q/Q-20F-E	W-Q/Q-20F-EE	20 STRANDED	0.648
W-Q/Q-20-E	W-Q/Q-20-EE	20 SOLID	0.709
W-Q/Q-18-E	W-Q/Q-18-EE	18 SOLID	0.453

INITIAL CALIBRATION TOLERANCES Per ANSI MC96.1 and ASTM E230 (°F)					
TEMPERATURE RANGE	STANDARD		SPECIAL		
	CALIBRATION	TOLERANCE	CALIBRATION	TOLERANCE	
32 to 1400°F	TYPE J	±4.0°F or ±.75%*	TYPE JJ	±2.0°F or ±.4%*	
32 to 2300°F	TYPE K	±4.0°F or ±.75%*	TYPE KK	±2.0°F or ±.4%*	
32 to 1600°F	TYPE E	±3.0°F or ±.50%*	TYPE EE	±1.8°F or ±.5%*	
32 to 2300°F	TYPE N	±4.0°F or ±.75%*	TYPE NN	±2.0°F or ±.4%*	

*Whichever is greater.

CALIBRATION: ANSI Type N

ORDERING CODE		CONDUCTOR SIZE (AWG)	NOMINAL LOOP RESISTANCE (2)
STANDARD	SPECIAL (1)		
W-Q/Q-24F-N	W-Q/Q-24F-NN	24 STRANDED	1.808
W-Q/Q-24-N	W-Q/Q-24-NN	24 SOLID	1.980
W-Q/Q-20F-N	W-Q/Q-20F-NN	20 STRANDED	0.715
W-Q/Q-20-N	W-Q/Q-20-NN	20 SOLID	0.783
W-Q/Q-18-N	W-Q/Q-18-NN	18 SOLID	0.500

CONDUCTOR SIZE (AWG)	INSULATION THICKNESS	JACKET THICKNESS	NOMINAL DIMENSIONS	APPROX. SHIPPING WT. lbs/1000 Ft. (Kg)
24 STRANDED	.013	.013	.076/.126	10 lbs (4.5 Kg)
24 SOLID	.013	.013	.072/.118	9 lbs (4.1 Kg)
20 STRANDED	.013	.013	.090/.154	13 lbs (5.9 Kg)
20 SOLID	.013	.013	.084/.142	12 lbs (5.4 Kg)
18 SOLID	.013	.013	.092/.158	21 lbs (9.5 Kg)

Notes:

- (1) Meets or exceeds Special Initial Calibration Tolerances per ANSI MC96.1-1982 and ASTM E230-1993.
- (2) Nominal resistance in OHMS per double feet at 68°F (20°C).



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SECTION WIRE Q-GLASS INSULATED WIRE

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Doc. No.: TE-CO010109-WIRE-090



VITREOUS SILICA INSULATED TYPE W-HG/HG (THERMOCOUPLE GRADE)

FIBERGLASS INSULATION

Individual conductors are insulated with a high temperature vitreous silica yarn. Conductors are laid parallel and covered with an overall high temperature vitreous silica yarn. A tracer is braided into the insulation for polarity and calibration identification. Not recommended for applications where insulation is subject to abrasion unless protected with a metallic overbraid.

PERFORMANCE FEATURES

Designed for continuous use to 1800° F (980° C),
intermittent to 2000° F (1095° C).
Asbestos replacement

APPLICATIONS

Ovens and Furnaces
Steel Industry
Furnace Temperature Surveys

CALIBRATION: ANSI Type J

ORDERING CODE		CONDUCTOR SIZE (AWG)	NOMINAL LOOP RESISTANCE (2)
STANDARD	SPECIAL (1)		
W-HG/HG-20F-J	W-HG/HG-20F-JJ	20 STRANDED	0.335
W-HG/HG-20-J	W-HG/HG-20-JJ	20 SOLID	0.367
W-HG/HG-18-J	W-HG/HG-18-JJ	18 SOLID	0.234
W-HG/HG-16-J	W-HG/HG-16-JJ	16 SOLID	0.145
W-HG/HG-14-J	W-HG/HG-14-JJ	14 SOLID	0.091

CALIBRATION: ANSI Type K

ORDERING CODE		CONDUCTOR SIZE (AWG)	NOMINAL LOOP RESISTANCE (2)
STANDARD	SPECIAL (1)		
W-HG/HG-20F-K	W-HG/HG-20F-KK	20 STRANDED	0.538
W-HG/HG-20-K	W-HG/HG-20-KK	20 SOLID	0.589
W-HG/HG-18-K	W-HG/HG-18-KK	18 SOLID	0.376
W-HG/HG-16-K	W-HG/HG-16-KK	16 SOLID	0.233
W-HG/HG-14-K	W-HG/HG-14-KK	14 SOLID	0.147

CALIBRATION: ANSI Type E

ORDERING CODE		CONDUCTOR SIZE (AWG)	NOMINAL LOOP RESISTANCE (2)
STANDARD	SPECIAL (1)		
W-HG/HG-20F-E	W-HG/HG-20F-EE	20 STRANDED	0.648
W-HG/HG-20-E	W-HG/HG-20-EE	20 SOLID	0.709
W-HG/HG-18-E	W-HG/HG-18-EE	18 SOLID	0.453
W-HG/HG-16-E	W-HG/HG-16-EE	16 SOLID	0.281
W-HG/HG-14-E	W-HG/HG-14-EE	14 SOLID	0.177

CALIBRATION: ANSI Type N

ORDERING CODE		CONDUCTOR SIZE (AWG)	NOMINAL LOOP RESISTANCE (2)
STANDARD	SPECIAL (1)		
W-HG/HG-20F-N	W-HG/HG-20F-NN	20 STRANDED	0.715
W-HG/HG-20-N	W-HG/HG-20-NN	20 SOLID	0.783
W-HG/HG-18-N	W-HG/HG-18-NN	18 SOLID	0.500
W-HG/HG-16-N	W-HG/HG-16-NN	16 SOLID	0.310
W-HG/HG-14-N	W-HG/HG-14-NN	14 SOLID	0.195

CALIBRATION	COLOR CODE (ANSI)			COLOR CODE (IEC)*		
	POSITIVE	NEGATIVE	OVERALL	POSITIVE	NEGATIVE	OVERALL
TYPE J	WHITE	RED	WHITE	BLACK	WHITE	WHITE
TYPE K	YELLOW	RED	WHITE	GREEN	WHITE	WHITE
TYPE E	PURPLE	RED	WHITE	PURPLE	WHITE	WHITE
TYPE N	ORANGE	RED	WHITE	PINK	WHITE	PINK

* Add (-IEC) to the end of the ordering code for IEC color coded insulation and jacketed wire.
Example: W-HG/HG-20-J-IEC

INITIAL CALIBRATION TOLERANCES Per ANSI MC96.1 and ASTM E230 (°F)				
TEMPERATURE RANGE	STANDARD		SPECIAL	
	CALIBRATION	TOLERANCE	CALIBRATION	TOLERANCE
32 to 1400°F	TYPE J	±4.0°F or ±.75%*	TYPE JJ	±2.0°F or ±.4%*
32 to 2300°F	TYPE K	±4.0°F or ±.75%*	TYPE KK	±2.0°F or ±.4%*
32 to 1600°F	TYPE E	±3.0°F or ±.50%*	TYPE EE	±1.8°F or ±.5%*
32 to 2300°F	TYPE N	±4.0°F or ±.75%*	TYPE NN	±2.0°F or ±.4%*

*Whichever is greater.

CONDUCTOR SIZE (AWG)	INSULATION THICKNESS	JACKET THICKNESS	NOMINAL DIMENSIONS	APPROX. SHIPPING WT. lbs/1000 Ft. (Kg)
20 STRANDED	.016	.016	.102/.172	14 lbs (6.4 Kg)
20 SOLID	.016	.016	.096/.160	13 lbs (5.9 Kg)
18 SOLID	.016	.016	.104/.176	18 lbs (8.2 Kg)
16 SOLID	.016	.016	.115/.198	25 lbs (11.3 Kg)
14 SOLID	.016	.016	.128/.224	34 lbs (15.4 Kg)

Notes:

- (1) Meets or exceeds Special Initial Calibration Tolerances per ANSI MC96.1-1982 and ASTM E230-1993.
- (2) Nominal resistance in OHMS per double feet at 68°F (20°C).



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SECTION WIRE

VITREOUS SILICA INSULATED WIRE

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Doc. No.: TE-CO010109-WIRE-100



CERAMIC FIBER INSULATED TYPE W-CE/CE

CERAMIC FIBER INSULATION

Individual conductors are insulated with a high temperature ceramic yarn. Conductors are laid parallel and covered with an overall high temperature ceramic yarn. A tracer is braided into the insulation for polarity and calibration identification. Used when an application requires flexibility while pushing thermocouples to their high temperature limit.

PERFORMANCE FEATURES

Designed for continuous use to 2200° F (1204° C),
intermittent to 2600° F (1427° C).

Permits on site fabrication of high temperature thermocouples

APPLICATIONS

Heat Treating
Steel Industry
Load Thermocouples

CALIBRATION: ANSI Type J

ORDERING CODE		CONDUCTOR SIZE (AWG)	NOMINAL LOOP RESISTANCE (2)
STANDARD	SPECIAL (1)		
W-CEB/CEB-20F-J	W-CEB/CEB-20F-JJ	20 STRANDED	0.335
W-CEB/CEB-20-J	W-CEB/CEB-20-JJ	20 SOLID	0.367
W-CEB/CEB-18-J	W-CEB/CEB-18-JJ	18 SOLID	0.234
W-CEB/CEB-16-J	W-CEB/CEB-16-JJ	16 SOLID	0.145
W-CEB/CEB-14-J	W-CEB/CEB-14-JJ	14 SOLID	0.091

CALIBRATION: ANSI Type K

ORDERING CODE		CONDUCTOR SIZE (AWG)	NOMINAL LOOP RESISTANCE (2)
STANDARD	SPECIAL (1)		
W-CEB/CEB-20F-K	W-CEB/CEB-20F-KK	20 STRANDED	0.538
W-CEB/CEB-20-K	W-CEB/CEB-20-KK	20 SOLID	0.589
W-CEB/CEB-18-K	W-CEB/CEB-18-KK	18 SOLID	0.376
W-CEB/CEB-16-K	W-CEB/CEB-16-KK	16 SOLID	0.233
W-CEB/CEB-14-K	W-CEB/CEB-14-KK	14 SOLID	0.147

CALIBRATION: ANSI Type E

ORDERING CODE		CONDUCTOR SIZE (AWG)	NOMINAL LOOP RESISTANCE (2)
STANDARD	SPECIAL (1)		
W-CEB/CEB-20F-E	W-CEB/CEB-20F-EE	20 STRANDED	0.648
W-CEB/CEB-20-E	W-CEB/CEB-20-EE	20 SOLID	0.709
W-CEB/CEB-18-E	W-CEB/CEB-18-EE	18 SOLID	0.453
W-CEB/CEB-16-E	W-CEB/CEB-16-EE	16 SOLID	0.281
W-CEB/CEB-14-E	W-CEB/CEB-14-EE	14 SOLID	0.177

CALIBRATION: ANSI Type N

ORDERING CODE		CONDUCTOR SIZE (AWG)	NOMINAL LOOP RESISTANCE (2)
STANDARD	SPECIAL (1)		
W-CEB/CEB-20F-N	W-CEB/CEB-20F-NN	20 STRANDED	0.715
W-CEB/CEB-20-N	W-CEB/CEB-20-NN	20 SOLID	0.783
W-CEB/CEB-18-N	W-CEB/CEB-18-NN	18 SOLID	0.500
W-CEB/CEB-16-N	W-CEB/CEB-16-NN	16 SOLID	0.310
W-CEB/CEB-14-N	W-CEB/CEB-14-NN	14 SOLID	0.195

CALIBRATION	COLOR CODE (ANSI)			COLOR CODE (IEC)*		
	POSITIVE	NEGATIVE	OVERALL	POSITIVE	NEGATIVE	OVERALL
TYPE J	WHITE	RED	WHITE	BLACK	WHITE	WHITE
TYPE K	YELLOW	RED	WHITE	GREEN	WHITE	WHITE
TYPE E	PURPLE	RED	WHITE	PURPLE	WHITE	WHITE
TYPE N	ORANGE	RED	WHITE	PINK	WHITE	PINK

* Add (-IEC) to the end of the ordering code for IEC color coded insulation and jacketed wire.
Example: W-CEB/CEB-20-J-IEC

INITIAL CALIBRATION TOLERANCES Per ANSI MC96.1 and ASTM E230 (°F)					
TEMPERATURE RANGE	STANDARD		SPECIAL		
	CALIBRATION	TOLERANCE	CALIBRATION	TOLERANCE	
32 to 1400°F	TYPE J	±4.0°F or ±.75%*	TYPE JJ	±2.0°F or ±.4%*	
32 to 2300°F	TYPE K	±4.0°F or ±.75%*	TYPE KK	±2.0°F or ±.4%*	
32 to 1600°F	TYPE E	±3.0°F or ±.50%*	TYPE EE	±1.8°F or ±.5%*	
32 to 2300°F	TYPE N	±4.0°F or ±.75%*	TYPE NN	±2.0°F or ±.4%*	

*Whichever is greater.

CONDUCTOR SIZE (AWG)	INSULATION THICKNESS	JACKET THICKNESS	NOMINAL DIMENSIONS	APPROX. SHIPPING WT. lbs/1000 Ft. (Kg)
20 STRANDED	.018	.018	.110/.184	17 lbs (7.7 Kg)
20 SOLID	.018	.018	.104/.172	16 lbs (7.3 Kg)
18 SOLID	.018	.018	.112/.188	24 lbs (10.9 Kg)
16 SOLID	.018	.018	.123/.210	32 lbs (14.5 Kg)
14 SOLID	.018	.018	.136/.236	44 lbs (20.0 Kg)

Notes:

- (1) Meets or exceeds Special Initial Calibration Tolerances per ANSI MC96.1-1982 and ASTM E230-1993.
- (2) Nominal resistance in OHMS per double feet at 68°F (20°C).



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SECTION WIRE

CERAMIC INSULATED WIRE

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Doc. No.: TE-CO010109-WIRE-110

WIRE & CABLE

S - OVERBRAID

STAINLESS STEEL OVERBRAID

Is a round wire braid metal covering available for use with insulated thermocouple wire. This covering is designed for use at high temperature and offers excellent cut-thru, abrasion and chemical resistance.

PERFORMANCE FEATURES

- High resistance to abrasion and mechanical damage
- Provides superior tensile strength
- Protects against longitudinal stress in vertical installations
- Highly resistant to corrosives
- Color tracer for calibration identification available

TO ORDER WIRE WITH A STAINLESS STEEL OVERBRAID
ADD "S" TO THE ORDER CODE:

EXAMPLE: G/GS-20F-JJ

ADD "S" AT THE END OF THE LETTER DESIGNATION



ARMOR TUBING

FLEXIBLE ARMOR TUBING

Used as conduit for any type of wire, Stainless Steel interlocking armor is constructed for flexibility and strength. Supplied cut to length and coiled.



ORDERING CODE	NOM. INSIDE DIAMETER	OUTSIDE DIAMETER	INSIDE DIAMETER	ARMOR TYPE
TU1068-4:1/8"	1/8" (.125)	.190"/.195"	.128"/.140"	SQUARE LOCK
TU1068-2: 3/16"	3/16" (.187)	.270"/.282"	.190"/.202"	SQUARE LOCK
TU1068-1:1/4"	1/4" (.25)	.340"/.360"	.255"/.265"	INTERLOCKING
TU1068-3: 5/16"	5/16" (.313)	.416"/.428"	.316"/.328"	SQUARE LOCK
TU1068-6: 3/8"	3/8" (.375)	.480"/.492"	.380"/.392"	SQUARE LOCK
TU1068-7:1/2"	1/2" (.50)	.632"/.642"	.493"/.507"	SQUARE LOCK

RTD WIRE

TEFLON INSULATED RTD WIRE, SINGLES

ORDERING CODE	CONDUCTOR SIZE (AWG)	INSULATION COLOR	NOMINAL LOOP RESISTANCE*
W-TEX-24F-NICU-RED	24 STRANDED	RED	25.1
W-TEX-24F-NICU-WHT	24 STRANDED	WHITE	25.1

400°F (205°C)

TEFLON® (FEP) or Equivalent INSULATION

Individual nickel clad copper conductors are insulated with extruded FEP Teflon or equivalent. Conductors with overall jacket twisted and insulated with extruded FEP Teflon or equivalent.

TEFLON INSULATED RTD WIRE, TWISTED, JACKETED

ORDERING CODE	NUMBER of CONDUCTORS	CONDUCTOR SIZE (AWG)	INSULATION COLOR	JACKET COLOR	NOMINAL LOOP RESISTANCE*
W-TEX/TEXTW-24F-3NICU	3	24 STRANDED	2 RED, 1 WHITE	WHITE	25.1
W-TEX/TEXTW-24F-4NICU	4	24 STRANDED	2 RED, 2 WHITE	WHITE	25.1
W-TEX/TEXTW-24F-6NICU	6	24 STRANDED	4 RED, 2 WHITE	WHITE	25.1

FIBERGLASS INSULATED RTD WIRE, SINGLES

ORDERING CODE	CONDUCTOR SIZE (AWG)	INSULATION COLOR	NOMINAL LOOP RESISTANCE*
W-G-24F-NICU-RED	24 STRANDED	RED	25.1
W-G-24F-NICU-WHT	24 STRANDED	WHITE	25.1

950°F (510°C)

FIBERGLASS INSULATION

Individual nickel clad copper conductors are insulated with a fiberglass braid which is saturated with a resin to improve abrasion resistance and reduce fraying. Conductors with overall jacket twisted and insulated with an overall fiberglass jacket and a final impregnation of resin.

FIBERGLASS INSULATED RTD WIRE, TWISTED, JACKETED

ORDERING CODE	NUMBER of CONDUCTORS	CONDUCTOR SIZE (AWG)	INSULATION COLOR	JACKET COLOR	NOMINAL LOOP RESISTANCE*
W-G/GTW-24F-3NICU	3	24 STRANDED	2 RED, 1 WHITE	WHITE	25.1
W-G/GTW-24F-4NICU	4	24 STRANDED	2 RED, 2 WHITE	WHITE	25.1
W-G/GTW-24F-6NICU	6	24 STRANDED	4 RED, 2 WHITE	WHITE	25.1

* Nominal Resistance in OHMS per 1,000 Ft. @ 68° F (20° C).



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SECTION - WIRE

STAINLESS STEEL OVERBRAID, INTERLOCKING ARMOR, RTD WIRE

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Doc. No.: TE-CO010109-WIRE-120

PVC INSULATED SHIELDED TYPE W-P/ALPTWK (THERMOCOUPLE EXTENSION GRADE CABLE)

PVC INSULATION MULTI-PAIR THERMOCOUPLE CABLE

Individual conductors are insulated with a flexible polyvinyl chloride. Conductors are twisted in pairs and numbered, a communications wire is added and pairs are cabled and a polyester backed aluminum tape shield applied with a bare stranded copper drain wire. A polyvinyl chloride jacket is extruded over the shielded pair which includes a ripcord for easy jacket removal.

CABLE SPECIFICATIONS

Conductors: 20 Gauge Solid
Singles Insulation: .016" nominal, 105°C PVC
Construction: Twisted Pairs
Pair Identification: One Conductor of Each Pair Numbered
Lay of Twist: 2 to 3"
Shield: Polyester Backed Aluminum Tape, 100% Coverage
Drain Wire: Stranded Uninsulated Tinned Copper
Communication Wire: Insulated (Orange) Stranded Copper
Jacket: 90°C PVC

ORDERING CODE	NUMBER OF PAIRS	NOM. OUTER JACKET THK.	NOM. OUTER JACKET DIAM.	MIN. BEND RADIUS	TENSION LOADING	NET WEIGHT LbS./1000 FT.
P/ALPTWK-04-20-XX	4	.042	.368	2.25	74	77
P/ALPTWK-06-20-XX	6	.053	.442	2.75	107	105
P/ALPTWK-08-20-XX	8	.053	.480	3.00	140	136
P/ALPTWK-10-20-XX	10	.053	.538	3.25	172	156
P/ALPTWK-12-20-XX	12	.053	.557	3.25	205	177
P/ALPTWK-16-20-XX	16	.064	.643	3.75	270	235
P/ALPTWK-20-20-XX	20	.064	.669	4.00	336	277
P/ALPTWK-24-20-XX	24	.064	.752	4.50	401	326

TO COMPLETE ORDERING CODE REPLACE "XX" WITH CALIBRATION

CALIBRATION SYMBOL	ORDERING CODE		CONDUCTOR SIZE (AWG)	NOMINAL LOOP RESISTANCE (2)
	STANDARD	SPECIAL (1)		
JX or JJX	W-P/ALPTW-XX-20-JX	W-P/ALPTW-XX-20-JJX	20 SOLID	0.367
KX or KXX	W-P/ALPTW-XX-20-KX	W-P/ALPTW-XX-20-KXX	20 SOLID	0.589
TX or TTX	W-P/ALPTW-XX-20-TX	W-P/ALPTW-XX-20-TTX	20 SOLID	0.304
EX or EEX	W-P/ALPTW-XX-20-EX	W-P/ALPTW-XX-20-EEX	20 SOLID	0.709
NX or NNX	W-P/ALPTW-XX-20-NX	W-P/ALPTW-XX-20-NNX	20 SOLID	0.783
SX/RX	W-P/ALPTW-XX-20-SX/RX		20 SOLID	0.040
BX	W-P/ALPTW-XX-20-BX		20 SOLID	0.098

"XX" IS REPLACED WITH THE NUMBER OF PAIRS

CALIBRATION	COLOR CODE (ANSI)			COLOR CODE (IEC)*		
	POSITIVE	NEGATIVE	OVERALL	POSITIVE	NEGATIVE	OVERALL
TYPE JX	WHITE	RED	BLACK	BLACK	WHITE	BLACK
TYPE KX	YELLOW	RED	YELLOW	GREEN	WHITE	GREEN
TYPE TX	BLUE	RED	BLUE	BROWN	WHITE	BROWN
TYPE EX	PURPLE	RED	PURPLE	PURPLE	WHITE	PURPLE
TYPE NX	ORANGE	RED	ORANGE	PINK	WHITE	PINK
TYPE SX/RX	BLACK	RED	GREEN	ORANGE	WHITE	ORANGE
BX	GRAY	RED	GRAY	RED	GRAY	GRAY

* Add (-IEC) to the end of the ordering code for IEC color coded insulation and jacketed wire.
Example: W-P/ALPTWK-12-20-JX-IEC

INITIAL CALIBRATION TOLERANCES Per ANSI MC96.1 and ASTM E230 (°F)					
TEMPERATURE RANGE	STANDARD		SPECIAL		
	CALIBRATION	TOLERANCE	CALIBRATION	TOLERANCE	
32 to 400°F	TYPE JX	±4.0°F	TYPE JJX	±2.0°F	
32 to 400°F	TYPE KX	±4.0°F	TYPE KXX	±2.0°F	
32 to 212°F	TYPE TX	±1.8°F	TYPE TTX	±0.9°F	
32 to 400°F	TYPE EX	±3.0°F	TYPE EEX	±1.8°F	
32 to 400°F	TYPE NX	±4.0°F	TYPE NNX	±2.0°F	
32 to 400°F	TYPE SX, RX*	±9.0°F			
32 to 212°F	TYPE BX**	±6.7°F			

* Type S and R thermocouples utilize the same extension wire.

** Copper versus copper can be used as extension wire for type B thermocouples if transition temperature is at or below 212°F for a maximum error of 6.7°F. Above 212°F, PCLW30-6 alloy (or equivalent) should be used as the positive extension wire with copper as the negative extension wire. (Note: PCLW30-6 or equivalent can also be used in the 122°F to 212°F temperature range, which will reduce the error to -0/+4°F.)

Notes:

- (1) Meets or exceeds Special Initial Calibration Tolerances per ANSI MC96.1-1982 and ASTM E230-1993.
- (2) Nominal resistance in OHMS per double feet at 68°F (20°C).



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SECTION WIRE PVC INSULATED MULTI-PAIR THERMOCOUPLE CABLE

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Doc. No.: TE-CO010109-WIRE-130

INTRODUCTION

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