THERMOCOUPLE WIRE

Ceramic Fiber Insulated 2200°F (1204°C)

Applications

- Heat Treatment
- Component Testing
- Steel and Aluminum ...Industry
- Metals Production
- Furnace Surveys
- Beaded Thermocouple ...Replacement

Available Options

- Colored Tracers for Polarity ...Identification
- Impregnated Insulation and ...Jackets
- MICA/Glass Barrier Tape
- Stabilized Type K & ...Type E Conductors
- Twisted Pair
- Metal Coverings
- Tighter Than Special Limit ...Accuracy Tolerances
- Calibration Test Reports

Product Features

- Continuous use up to ...2200F (1204C)
- Single exposure up to ...2400F (1316C)
- **Heavy Build** Version ...of CEFIRSF™
- Good Abrasion Resistance

Product Specifications

Conductors: Solid or stranded thermocouple wire per ASTM E230 & ANSI MC96.1

Insulation: Braided ceramic fiber

Construction: Parallel conductors

Jacket: Braided ceramic fiber

Operating Temperature: +2200F (+1204C) continuous
+2400F (+1316C) single exposure

Limits of Error: Conforms to ASTM E230, IEC 584 and ANSI MC 96.1

Color Code: Supplied white without saturants or colored tracers

Ordering Code

CEFIRSF [ ] - [ ] [ ] - [ ]

Optional Metal Coverings
- S = Stainless Steel Braid
- CU = Tinned Copper Braid
- I = Inconel Braid
- X = Half-Oval Galvanized Steel

Wire Size AWG or Metric

Add (F) for Stranded Wire

Calibration Grade Designation Per Table 1

Conductor Size		Insulation Thickness		Jacket Thickness		Outer Diameter		Net Weight	
AWG	(MM)	inches	(MM)	inches	(MM)	inches	(MM)	LB/MF	(KG/KM)
12	(2.06)	.018	(.46)	.018	(.46)	.153 x .270	(3.9 x 6.9)	50	(74)
14	(1.63)	.018	(.46)	.018	(.46)	.136 x .236	(3.5 x 6.0)	33	(49)
16	(1.29)	.018	(.46)	.018	(.46)	.123 x .210	(3.1 x 5.3)	24	(36)
16F*	(1.47)	.018	(.46)	.018	(.46)	.130 x .224	(3.3 x 5.7)	26	(39)
18	(1.02)	.018	(.46)	.018	(.46)	.112 x .188	(2.8 x 4.8)	18	(27)
18F*	(1.22)	.018	(.46)	.018	(.46)	.120 x .204	(3.0 x 5.2)	19	(28)
20	(0.81)	.018	(.46)	.018	(.46)	.104 x .172	(2.6 x 4.4)	14	(21)
20F*	(0.97)	.018	(.46)	.018	(.46)	.108 x .180	(2.7 x 4.6)	15	(22)
22	(0.64)	.018	(.46)	.018	(.46)	.097 x .158	(2.5 x 4.0)	12	(18)

22F*	(0.76)	.018	(.46)	.018	(.46)	.102 x .168	(2.6 x 4.3)	13	(19)
24	(0.51)	.018	(.46)	.018	(.46)	.092 x .148	(2.3 x 3.8)	9.5	(14)
24F*	(0.61)	.018	(.46)	.018	(.46)	.096 x .156	(2.4 x 4.0)	9.9	(15)

MANY ITEMS AVAILABLE FROM STOCK WITHIN 24 HOURS

The products referenced above represent the most popular constructions. Other constructions can be manufactured to meet individual specification and application requirements. Contact factory for additional information.

Table 1

Initial Calibration Tolerances Per ASTM E230 and ANSI MC96.1

			Tolerance-Reference Junction 32F (0C)		
Thermocouple Type	**Temperature Range F (C)**	**Grade Designation**	**Standard Grade Limits F (C) whichever is greater**	**Grade Designation**	**Special Grade Limits F (C) whichever is greater**
Thermocouple Wire					
T	32 (0) to 700 (370)	T	±1.8 (1) or ±0.75%	TT	±0.9 (0.5) or 0.4%
J	32 (0) to 1400 (760)	J	±4 (2.2) or ±0.75%	JJ	±2 (1.1) or 0.4%
E	32 (0) to 1600 (870)	E	±3.1 (1.7) or ±0.50%	EE	±1.8 (1) or 0.4%
K or N	32 (0) to 2300 (1260)	K or N	±4 (2.2) or ±0.75%	KK or NN	±2 (1.1) or 0.4%
T*	-328 (-200) to 32 (0)	T	±1.8 (1) or ±1.5%	TT	±0.9 (0.5) or 0.8%**
E*	-328 (-200) to 32 (0)	E	±3.1 (1.7) or ±1%	EE	±1.8 (1) or 0.5%**
K*	-328 (-200) to 32 (0)	K	±4 (2.2) or ±2%	KK	**
Extension Wire					
TX	32 (0) to 212 (100)	TX	±1.8 (1)	TTX	±0.9 (0.5)
JX	32 (0) to 400 (200)	JX	±4 (2.2)	JJX	±2 (1.1)
EX	32 (0) to 400 (200)	EX	±3.1 (1.7)	EEX	±1.8 (1)
KX or NX	32 (0) to 400 (200)	KX or NX	±4 (2.2)	KKX or NNX	±2 (1.1)
RX or SX	32 (0) to 400 (200)	RX or SX	±9 (5)		
BX	32 (0) to 212 (100)	BX***	±7.6 (4.2)		
BX	32 (0) to 400 (200)	BX ALLOY***	±6.7 (3.7)		

* Thermocouple material is normally supplied to meet tolerances above 0C (32F). If material is required to meet tolerances below 0C (32F), the purchase order must so state. Special selection of material is required.

** Suggested initial calibration tolerance. Requirements should be discussed between purchaser and supplier.

*** Copper vs. copper can be used as an extension for Type B thermocouples if the transition is below 100C (212F). Above 100C (212F), PCLW30-6 alloy should be used as the positive extension wire.

THERMOCOUPLE WIRE

Ceramic Fiber Insulated 2200°F (1204°C)

Applications

- Heat Treatment
- Component Testing
- Steel and Aluminum ...Industry
- Metals Production
- Furnace Surveys
- Beaded Thermocouple ...Replacement

Available Options

- Colored Tracers for Polarity ...Identification
- Impregnated Insulation and ...Jackets
- MICA/Glass Barrier Tape
- Stabilized Type K & ...Type E Conductors
- Twisted Pair
- Metal Coverings
- Tighter Than Special Limit ...Accuracy Tolerances
- Calibration Test Reports

Product Features

- Continuous use up to ...2200F (1204C)
- Single exposure up to ...2400F (1316C)
- **Light Build** Version ...of CEFIRSF™
- Good Abrasion Resistance

Product Specifications

Conductors: Solid or stranded thermocouple wire per ASTM E230 & ANSI MC96.1

Insulation: Braided ceramic fiber

Construction: Parallel conductors

Jacket: Braided ceramic fiber

Operating Temperature: +2200F (+1204C) continuous
+2400F (+1316C) single exposure

Limits of Error: Conforms to ASTM E230, IEC 584 and ANSI MC 96.1

Color Code: Supplied white without saturants or colored tracers

Ordering Code

CEFIRSF90 [ ] - [ ] [ ] - [ ]

Optional Metal Coverings
- S = Stainless Steel Braid
- CU = Tinned Copper Braid
- I = Inconel Braid
- X = Half-Oval Galvanized Steel

Wire Size AWG or Metric

Add (F) for Stranded Wire

Calibration Grade Designation Per Table 1

Conductor Size		Insulation Thickness		Jacket Thickness		Outer Diameter		Net Weight	
AWG	(MM)	inches	(MM)	inches	(MM)	inches	(MM)	LB/MF	(KG/KM)
14	(1.63)	.014	(.36)	.018	(.46)	.128 x .220	(3.3 x 5.6)	33	(49)
16	(1.29)	.014	(.36)	.018	(.46)	.115 x .194	(2.9 x 4.9)	24	(36)
16F*	(1.47)	.014	(.36)	.018	(.46)	.122 x .208	(3.1 x 5.3)	26	(39)
18	(1.02)	.014	(.36)	.018	(.46)	.104 x .172	(2.6 x 4.4)	18	(27)
18F*	(1.22)	.014	(.36)	.018	(.46)	.112 x .188	(2.8 x 4.8)	19	(28)
20	(0.81)	.014	(.36)	.018	(.46)	.096 x .156	(2.4 x 4.0)	14	(21)
20F*	(0.97)	.014	(.36)	.018	(.46)	.100 x .164	(2.5 x 4.2)	15	(22)
22	(0.64)	.014	(.36)	.018	(.46)	.089 x .142	(2.3 x 3.6)	12	(18)
22F*	(0.76)	.014	(.36)	.018	(.46)	.094 x .152	(2.4 x 3.9)	13	(19)

24	(0.51)	.014	(.36)	.018	(.46)	.084 x .132	(2.1 x 3.4)	9.3	(14)
24F*	(0.61)	.014	(.36)	.018	(.46)	.088 x .140	(2.2 x 3.6)	9.7	(15)

MANY ITEMS AVAILABLE FROM STOCK WITHIN 24 HOURS

The products referenced above represent the most popular constructions. Other constructions can be manufactured to meet individual specification and application requirements. Contact factory for additional information.

Table 1

Initial Calibration Tolerances Per ASTM E230 and ANSI MC96.1

			Tolerance-Reference Junction 32F (0C)		
Thermocouple Type	**Temperature Range F (C)**	**Grade Designation**	**Standard Grade Limits F (C) whichever is greater**	**Grade Designation**	**Special Grade Limits F (C) whichever is greater**
Thermocouple Wire					
T	32 (0) to 700 (370)	T	±1.8 (1) or ±0.75%	TT	±0.9 (0.5) or 0.4%
J	32 (0) to 1400 (760)	J	±4 (2.2) or ±0.75%	JJ	±2 (1.1) or 0.4%
E	32 (0) to 1600 (870)	E	±3.1 (1.7) or ±0.50%	EE	±1.8 (1) or 0.4%
K or N	32 (0) to 2300 (1260)	K or N	±4 (2.2) or ±0.75%	KK or NN	±2 (1.1) or 0.4%
T*	-328 (-200) to 32 (0)	T	±1.8 (1) or ±1.5%	TT	±0.9 (0.5) or 0.8%**
E*	-328 (-200) to 32 (0)	E	±3.1 (1.7) or ±1%	EE	±1.8 (1) or 0.5%**
K*	-328 (-200) to 32 (0)	K	±4 (2.2) or ±2%	KK	**
Extension Wire					
TX	32 (0) to 212 (100)	TX	±1.8 (1)	TTX	±0.9 (0.5)
JX	32 (0) to 400 (200)	JX	±4 (2.2)	JJX	±2 (1.1)
EX	32 (0) to 400 (200)	EX	±3.1 (1.7)	EEX	±1.8 (1)
KX or NX	32 (0) to 400 (200)	KX or NX	±4 (2.2)	KKX or NNX	±2 (1.1)
RX or SX	32 (0) to 400 (200)	RX or SX	±9 (5)		
BX	32 (0) to 212 (100)	BX***	±7.6 (4.2)		
BX	32 (0) to 400 (200)	BX ALLOY***	±6.7 (3.7)		

* Thermocouple material is normally supplied to meet tolerances above 0C (32F). If material is required to meet tolerances below 0C (32F), the purchase order must so state. Special selection of material is required.

** Suggested initial calibration tolerance. Requirements should be discussed between purchaser and supplier.

*** Copper vs. copper can be used as an extension for Type B thermocouples if the transition is below 100C (212F). Above 100C (212F), PCLW30-6 alloy should be used as the positive extension wire.

THERMOCOUPLE WIRE

Vitreous Silica Insulated 1800°F (982°C)

Applications

- Heat Treatment
- Component Testing
- Steel and Aluminum Industry
- Metals Production
- Furnace Surveys

Available Options

- No tracers
- Impregnated Jacket
- Stabilized Type K & Type E Conductors
- Metal Coverings
- Tighter Than Special Limit Accuracy Tolerances
- Calibration Test Reports

Product Features

- Continuous use up to 1800F (982C)
- Single exposure up to 2000F (1093C)
- **Heavy Build** Version of HG/HG
- Not Recommended for Abrasive Applications at High Temperatures

Product Specifications

Conductors:	Solid or stranded thermocouple wire per ASTM E230 & ANSI MC96.1
Insulation:	Braided vitreous silica
Construction:	Parallel conductors
Jacket:	Braided vitreous silica
Operating Temperature:	+1800F (+982C) continuous +2000F (+1093C) single exposure
Limits of Error:	Conforms to ASTM E230, IEC 584 and ANSI MC 96.1
Color Code:	Supplied white without saturants red tracer in negative leg

Ordering Code

HG / HG ( ) - ( ) ( ) - ( )

- ( ) Optional Metal Coverings
  - S = Stainless Steel Braid
  - CU = Tinned Copper Braid
  - I = Inconel Braid
  - X = Half-Oval Galvanized Steel
- ( ) Wire Size AWG or Metric
- ( ) Add (F) for Stranded Wire
- ( ) Calibration Grade Designation Per Table 1

Conductor Size		Insulation Thickness		Jacket Thickness		Outer Diameter		Net Weight	
AWG	(MM)	inches	(MM)	inches	(MM)	inches	(MM)	LB/MF	(KG/KM)
12	(2.05)	.020	(.51)	.020	(.51)	.161 x .282	(4.1 x 7.2)	57	(85)
14	(1.63)	.015	(.38)	.015	(.38)	.124 x .218	(3.1 x 5.5)	34	(51)
14F*	(1.80)	.015	(.38)	.015	(.38)	.132 x .234	(3.4 x 5.9)	38	(57)
16	(1.29)	.015	(.38)	.015	(.38)	.111 x .192	(2.8 x 4.9)	24	(36)
16F*	(1.47)	.015	(.38)	.015	(.38)	.118 x .206	(3.0 x 5.2)	26	(39)
18	(1.02)	.015	(.38)	.015	(.38)	.100 x .170	(2.5 x 4.3)	17	(25)
18F*	(1.22)	.015	(.38)	.015	(.38)	.108 x .186	(2.7 x 4.7)	18	(27)
20	(0.81)	.015	(.38)	.015	(.38)	.092 x .154	(2.3 x 3.9)	14	(21)
20F*	(0.97)	.015	(.38)	.015	(.38)	.096 x .162	(2.4 x 4.1)	15	(22)
22	(0.64)	.015	(.38)	.015	(.38)	.085 x .140	(2.2 x 3.6)	8.1	(13)
24	(0.51)	.015	(.38)	.015	(.38)	.080 x .130	(2.0 x 3.3)	7.1	(11)
24F*	(0.61)	.015	(.38)	.015	(.38)	.084 x .138	(2.1 x 3.5)	7.6	(12)

MANY ITEMS AVAILABLE FROM STOCK WITHIN 24 HOURS

The products referenced above represent the most popular constructions. Other constructions can be manufactured to meet individual specification and application requirements. Contact factory for additional information.

Table 1

Initial Calibration Tolerances Per ASTM E230 and ANSI MC96.1

			Tolerance-Reference Junction 32F (0C)		
Thermocouple Type	Temperature Range F (C)	Grade Designation	Standard Grade Limits F (C) whichever is greater	Grade Designation	Special Grade Limits F (C) whichever is greater
Thermocouple Wire					
T	32 (0) to 700 (370)	T	±1.8 (1) or ±0.75%	TT	±0.9 (0.5) or 0.4%
J	32 (0) to 1400 (760)	J	±4 (2.2) or ±0.75%	JJ	±2 (1.1) or 0.4%
E	32 (0) to 1600 (870)	E	±3.1 (1.7) or ±0.50%	EE	±1.8 (1) or 0.4%
K or N	32 (0) to 2300 (1260)	K or N	±4 (2.2) or ±0.75%	KK or NN	±2 (1.1) or 0.4%
T*	-328 (-200) to 32 (0)	T	±1.8 (1) or ±1.5%	TT	±0.9 (0.5) or 0.8%**
E*	-328 (-200) to 32 (0)	E	±3.1 (1.7) or ±1%	EE	±1.8 (1) or 0.5%**
K*	-328 (-200) to 32 (0)	K	±4 (2.2) or ±2%	KK	**
Extension Wire					
TX	32 (0) to 212 (100)	TX	±1.8 (1)	TTX	±0.9 (0.5)
JX	32 (0) to 400 (200)	JX	±4 (2.2)	JJX	±2 (1.1)
EX	32 (0) to 400 (200)	EX	±3.1 (1.7)	EEX	±1.8 (1)
KX or NX	32 (0) to 400 (200)	KX or NX	±4 (2.2)	KKX or NNX	±2 (1.1)
RX or SX	32 (0) to 400 (200)	RX or SX	±9 (5)		
BX	32 (0) to 212 (100)	BX***	±7.6 (4.2)		
BX	32 (0) to 400 (200)	BX ALLOY***	±6.7 (3.7)		

* Thermocouple material is normally supplied to meet tolerances above 0C (32F). If material is required to meet tolerances below 0C (32F), the purchase order must so state. Special selection of material is required.

** Suggested initial calibration tolerance. Requirements should be discussed between purchaser and supplier.

*** Copper vs. copper can be used as an extension for Type B thermocouples if the transition is below 100C (212F). Above 100C (212F), PCLW30-6 alloy should be used as the positive extension wire.

THERMOCOUPLE WIRE

Vitreous Silica Insulated 1800°F (982°C)

Applications

- Heat Treatment
- Component Testing
- Steel and Aluminum ...Industry
- Metals Production
- Furnace Surveys

Available Options

- No tracers
- Impregnated Jacket
- Stabilized Type K & ...Type E Conductors
- Metal Coverings
- Tighter Than Special Limit ...Accuracy Tolerances
- Calibration Test Reports

Product Features

- Continuous use up to ...1800F (982C)
- Single exposure up to ...2000F (1093C)
- **Light Build** Version ...of HG/HG
- Not Recommended ...for Abrasive Applications ...at High Temperatures

Product Specifications

Conductors:	Solid or stranded thermocouple wire per ASTM E230 & ANSI MC96.1
Insulation:	Braided vitreous silica
Construction:	Parallel conductors
Jacket:	Braided vitreous silica
Operating Temperature:	+1800F (+982C) continuous +2000F (+1093C) single exposure
Limits of Error:	Conforms to ASTM E230, IEC 584 and ANSI MC 96.1
Color Code:	Supplied white without saturants red tracer in negative leg

Ordering Code

HG / HG90 [ ] - [ ] [ ] - [ ]

- [ ]: Optional Metal Coverings
  - S = Stainless Steel Braid
  - CU = Tinned Copper Braid
  - I = Inconel Braid
  - X = Half-Oval Galvanized Steel
- [ ]: Wire Size AWG or Metric
- [ ]: Add (F) for Stranded Wire
- [ ]: Calibration Grade Designation Per Table 1

Conductor Size		Insulation Thickness		Jacket Thickness		Outer Diameter		Net Weight	
AWG	(MM)	inches	(MM)	inches	(MM)	inches	(MM)	LB/MF	(KG/KM)
14	(1.63)	.016	(.41)	.017	(.43)	.130 x .226	(3.3 x 5.7)	33	(49)
16	(1.29)	.016	(.41)	.017	(.43)	.117 x .200	(3.0 x 5.1)	24	(36)
16F*	(1.47)	.016	(.41)	.017	(.43)	.124 x .214	(3.1 x 5.4)	26	(39)
18	(1.02)	.016	(.41)	.017	(.43)	.106 x .178	(2.7 x 4.5)	18	(27)
18F*	(1.22)	.016	(.41)	.017	(.43)	.114 x .194	(2.9 x 4.9)	19	(28)
20	(0.81)	.016	(.41)	.017	(.43)	.098 x .162	(2.5 x 4.1)	14	(21)
20F*	(0.97)	.016	(.41)	.017	(.43)	.102 x .170	(2.6 x 4.3)	15	(22)
22	(0.64)	.016	(.41)	.017	(.43)	.091 x .148	(2.3 x 3.8)	12	(18)
22F*	(0.76)	.016	(.41)	.017	(.43)	.096 x .158	(2.4 x 4.0)	13	(19)

24	(0.51)	.016	(.41)	.017	(.43)	.086 x .138	(2.2 x 3.5)	9.3	(14)
24F*	(0.61)	.016	(.41)	.017	(.43)	.090 x .146	(2.3 x 3.7)	9.7	(15)

MANY ITEMS AVAILABLE FROM STOCK WITHIN 24 HOURS

The products referenced above represent the most popular constructions. Other constructions can be manufactured to meet individual specification and application requirements. Contact factory for additional information.

Table 1

Initial Calibration Tolerances Per ASTM E230 and ANSI MC96.1

			Tolerance-Reference Junction 32F (0C)		
Thermocouple Type	**Temperature Range F (C)**	**Grade Designation**	**Standard Grade Limits F (C) whichever is greater**	**Grade Designation**	**Special Grade Limits F (C) whichever is greater**
Thermocouple Wire					
T	32 (0) to 700 (370)	T	±1.8 (1) or ±0.75%	TT	±0.9 (0.5) or 0.4%
J	32 (0) to 1400 (760)	J	±4 (2.2) or ±0.75%	JJ	±2 (1.1) or 0.4%
E	32 (0) to 1600 (870)	E	±3.1 (1.7) or ±0.50%	EE	±1.8 (1) or 0.4%
K or N	32 (0) to 2300 (1260)	K or N	±4 (2.2) or ±0.75%	KK or NN	±2 (1.1) or 0.4%
T*	-328 (-200) to 32 (0)	T	±1.8 (1) or ±1.5%	TT	±0.9 (0.5) or 0.8%**
E*	-328 (-200) to 32 (0)	E	±3.1 (1.7) or ±1%	EE	±1.8 (1) or 0.5%**
K*	-328 (-200) to 32 (0)	K	±4 (2.2) or ±2%	KK	**
Extension Wire					
TX	32 (0) to 212 (100)	TX	±1.8 (1)	TTX	±0.9 (0.5)
JX	32 (0) to 400 (200)	JX	±4 (2.2)	JJX	±2 (1.1)
EX	32 (0) to 400 (200)	EX	±3.1 (1.7)	EEX	±1.8 (1)
KX or NX	32 (0) to 400 (200)	KX or NX	±4 (2.2)	KKX or NNX	±2 (1.1)
RX or SX	32 (0) to 400 (200)	RX or SX	±9 (5)		
BX	32 (0) to 212 (100)	BX***	±7.6 (4.2)		
BX	32 (0) to 400 (200)	BX ALLOY***	±6.7 (3.7)		

* Thermocouple material is normally supplied to meet tolerances above 0C (32F). If material is required to meet tolerances below 0C (32F), the purchase order must so state. Special selection of material is required.

** Suggested initial calibration tolerance. Requirements should be discussed between purchaser and supplier.

*** Copper vs. copper can be used as an extension for Type B thermocouples if the transition is below 100C (212F). Above 100C (212F), PCLW30-6 alloy should be used as the positive extension wire.

THERMOCOUPLE WIRE

Fiberglass Insulated 1300°F (704°C)

Applications

- Heat Treatment
- Component Testing
- Steel and Aluminum ...Industry
- Metals Production
- Furnace Surveys
- Temperature Sensors

Available Options

- Reduced Itch Tuffbond™ ...Impregnation on Singles
- Stabilized Type K & ...Type E Conductors
- Fused PTFE Tape Moisture ...Barrier
- Twisted/Shielded Pair
- Metal Coverings
- Tighter than Special Limit ...Accuracy Tolerances
- Special Color Codes
- Calibration Test Reports

Product Features

- Continuous use up to ...1300F (704C)
- Single Exposure up to ...1600F (871C)
- Good Moisture, Chemical ...and Abrasion Resistance
- High Temperature Stability

Product Specifications

Conductors: Solid or stranded thermocouple wire per ASTM E230 & ANSI MC96.1

Insulation: Braided fiberglass with high temperature impregnation*

Construction: Parallel conductors

Jacket: Braided fiberglass with high temperature impregnation*

Operating Temperature: +1300F (+704C) continuous
+1600F (+871C) single exposure

Limits of Error: Conforms to ASTM E230, IEC 584 and ANSI MC 96.1

Color Code: Conforms to ASTM E230 and ANSI MC 96.1 (International Color Codes Available)

*Impregnation maintained to +400F (+200C)

Ordering Code

Q / Q [ ] - [ ] [ ] - [ ]

Optional Metal Coverings

- S = Stainless Steel Braid
- CU = Tinned Copper Braid
- I = Inconel Braid
- X = Half-Oval Galvanized Steel

Wire Size AWG or Metric

Add (F) for Stranded Wire

Calibration Grade Designation Per Table 1

Conductor Size		Insulation Thickness		Jacket Thickness		Outer Diameter		Net Weight	
AWG	(MM)	inches	(MM)	inches	(MM)	inches	(MM)	LB/MF	(KG/KM)
12	(2.06)	.013	(.33)	.013	(.33)	.133 x .240	(3.4 x 6.1)	44	(65)
14	(1.63)	.013	(.33)	.013	(.33)	.116 x .206	(2.9 x 5.2)	31	(46)
16	(1.29)	.013	(.33)	.013	(.33)	.103 x .180	(2.6 x 4.6)	22	(33)
16F*	(1.47)	.013	(.33)	.013	(.33)	.110 x .194	(2.8 x 4.9)	23	(34)
18	(1.02)	.013	(.33)	.013	(.33)	.092 x .158	(2.3 x 4.0)	15	(22)
18F*	(1.22)	.013	(.33)	.013	(.33)	.100 x .174	(2.5 x 4.4)	16	(24)
20	(0.81)	.013	(.33)	.013	(.33)	.084 x .142	(2.1 x 3.6)	11	(16)
20F*	(0.97)	.013	(.33)	.013	(.33)	.088 x .150	(2.2 x 3.8)	12	(18)

22	(0.64)	.009	(.23)	.013	(.33)	.069 x .112	(1.8 x 2.8)	7.2	(11)
22F*	(0.76)	.009	(.23)	.013	(.33)	.074 x .122	(1.9 x 3.1)	7.8	(12)
24	(0.51)	.009	(.23)	.013	(.33)	.064 x .102	(1.6 x 2.6)	5.8	(8.6)
24F*	(0.61)	.009	(.23)	.013	(.33)	.068 x .110	(1.7 x 2.8)	6.2	(9.2)

MANY ITEMS AVAILABLE FROM STOCK WITHIN 24 HOURS

The products referenced above represent the most popular constructions. Other constructions can be manufactured to meet individual specification and application requirements. Contact factory for additional information.

Table 1

Initial Calibration Tolerances Per ASTM E230 and ANSI MC96.1

			Tolerance-Reference Junction 32F (0C)		
Thermocouple Type	**Temperature Range F (C)**	**Grade Designation**	**Standard Grade Limits F (C) whichever is greater**	**Grade Designation**	**Special Grade Limits F (C) whichever is greater**
Thermocouple Wire					
T	32 (0) to 700 (370)	T	±1.8 (1) or ±0.75%	TT	±0.9 (0.5) or 0.4%
J	32 (0) to 1400 (760)	J	±4 (2.2) or ±0.75%	JJ	±2 (1.1) or 0.4%
E	32 (0) to 1600 (870)	E	±3.1 (1.7) or ±0.50%	EE	±1.8 (1) or 0.4%
K or N	32 (0) to 2300 (1260)	K or N	±4 (2.2) or ±0.75%	KK or NN	±2 (1.1) or 0.4%
T*	-328 (-200) to 32 (0)	T	±1.8 (1) or ±1.5%	TT	±0.9 (0.5) or 0.8%**
E*	-328 (-200) to 32 (0)	E	±3.1 (1.7) or ±1%	EE	±1.8 (1) or 0.5%**
K*	-328 (-200) to 32 (0)	K	±4 (2.2) or ±2%	KK	**
Extension Wire					
TX	32 (0) to 212 (100)	TX	±1.8 (1)	TTX	±0.9 (0.5)
JX	32 (0) to 400 (200)	JX	±4 (2.2)	JJX	±2 (1.1)
EX	32 (0) to 400 (200)	EX	±3.1 (1.7)	EEX	±1.8 (1)
KX or NX	32 (0) to 400 (200)	KX or NX	±4 (2.2)	KKX or NNX	±2 (1.1)
RX or SX	32 (0) to 400 (200)	RX or SX	±9 (5)		
BX	32 (0) to 212 (100)	BX***	±7.6 (4.2)		
BX	32 (0) to 400 (200)	BX ALLOY***	±6.7 (3.7)		

* Thermocouple material is normally supplied to meet tolerances above 0C (32F). If material is required to meet tolerances below 0C (32F), the purchase order must so state. Special selection of material is required.

** Suggested initial calibration tolerance. Requirements should be discussed between purchaser and supplier.

*** Copper vs. copper can be used as an extension for Type B thermocouples if the transition is below 100C (212F). Above 100C (212F), PCLW30-6 alloy should be used as the positive extension wire.

THERMOCOUPLE WIRE

Fiberglass Insulated 1300°F (704°C)

Applications

- Heat Treatment
- Component Testing
- Steel and Aluminum ...Industry
- Metals Production
- Furnace Surveys
- Temperature Sensors

Available Options

- Reduced Itch TuffbondTM ...Impregnation on Singles
- Stabilized Type K & ...Type E Conductors
- Fused PTFE Tape Moisture ...Barrier
- Multi-Pair Cables
- Twisted/Shielded Pair
- Metal Coverings
- Tighter Than Special Limit ...Accuracy Tolerances
- Special Color Codes
- Calibration Test Reports

Product Features

- Continuous use up to ...1300F (704C)
- Single exposure up to ...1600F (871C)
- Good Moisture, Chemical ...and Abrasion Resistance
- High Temperature Stability

Product Specifications

Conductors: Solid or stranded thermocouple wire per ASTM E230 & ANSI MC96.1

Insulation: Braided fiberglass with high temperature impregnation*

Construction: Twisted conductors

Lay Length: 1-1/2" (38MM) to 3" (76MM)

Operating Temperature: +1300F (+704C) continuous
+1600F (+871C) single exposure

Limits of Error: Conforms to ASTM E230, IEC 584 and ANSI MC 96.1

Color Code: Conforms to ASTM E230 and ANSI MC 96.1 (International Color Codes Available)

*Impregnation maintained to +400F +(200C)

Ordering Code

Q / TW [ ] - [ ] [ ] - [ ]

Optional Metal Coverings

- S = Stainless Steel Braid
- CU = Tinned Copper Braid
- I = Inconel Braid
- X = Half-Oval Galvanized Steel

Wire Size AWG or Metric

Add (F) for Stranded Wire

Calibration Grade Designation Per Table 1

Conductor Size		Insulation Thickness		Jacket Thickness		Outer Diameter		Net Weight	
AWG	(MM)	inches	(MM)	inches	(MM)	inches	(MM)	LB/MF	(KG/KM)
12	(2.06)	.013	(.33)	3	(76)	.214	(5.4)	42	(62)
14	(1.63)	.013	(.33)	3	(76)	.180	(4.6)	29	(43)
16	(1.29)	.013	(.33)	2-1/2	(64)	.154	(3.9)	21	(31)
16F*	(1.47)	.013	(.33)	2-1/2	(64)	.168	(4.3)	22	(33)
18	(1.02)	.013	(.33)	2-1/2	(64)	.132	(3.4)	14	(21)
18F*	(1.22)	.013	(.33)	2-1/2	(64)	.148	(3.8)	15	(22)
20	(0.81)	.013	(.33)	2-1/2	(64)	.116	(3.0)	11	(16)

20F*	(0.97)	.013	(.33)	2-1/2	(64)	.124	(3.1)	12	(18)
22	(0.64)	.009	(.23)	1-1/2	(38)	.086	(2.2)	6.8	(10)
22F*	(0.76)	.009	(.23)	1-1/2	(38)	.096	(2.4)	7.4	(11)
24	(0.51)	.009	(.23)	1-1/2	(38)	.076	(1.9)	5.4	(8.0)
24F*	(0.61)	.009	(.23)	1-1/2	(38)	.084	(2.1)	5.8	(8.6)

MANY ITEMS AVAILABLE FROM STOCK WITHIN 24 HOURS

The products referenced above represent the most popular constructions. Other constructions can be manufactured to meet individual specification and application requirements. Contact factory for additional information.

Table 1

Initial Calibration Tolerances Per ASTM E230 and ANSI MC96.1

			Tolerance-Reference Junction 32F (0C)		
Thermocouple Type	**Temperature Range F (C)**	**Grade Designation**	**Standard Grade Limits F (C) whichever is greater**	**Grade Designation**	**Special Grade Limits F (C) whichever is greater**
Thermocouple Wire					
T	32 (0) to 700 (370)	T	±1.8 (1) or ±0.75%	TT	±0.9 (0.5) or 0.4%
J	32 (0) to 1400 (760)	J	±4 (2.2) or ±0.75%	JJ	±2 (1.1) or 0.4%
E	32 (0) to 1600 (870)	E	±3.1 (1.7) or ±0.50%	EE	±1.8 (1) or 0.4%
K or N	32 (0) to 2300 (1260)	K or N	±4 (2.2) or ±0.75%	KK or NN	±2 (1.1) or 0.4%
T*	-328 (-200) to 32 (0)	T	±1.8 (1) or ±1.5%	TT	±0.9 (0.5) or 0.8%**
E*	-328 (-200) to 32 (0)	E	±3.1 (1.7) or ±1%	EE	±1.8 (1) or 0.5%**
K*	-328 (-200) to 32 (0)	K	±4 (2.2) or ±2%	KK	**
Extension Wire					
TX	32 (0) to 212 (100)	TX	±1.8 (1)	TTX	±0.9 (0.5)
JX	32 (0) to 400 (200)	JX	±4 (2.2)	JJX	±2 (1.1)
EX	32 (0) to 400 (200)	EX	±3.1 (1.7)	EEX	±1.8 (1)
KX or NX	32 (0) to 400 (200)	KX or NX	±4 (2.2)	KKX or NNX	±2 (1.1)
RX or SX	32 (0) to 400 (200)	RX or SX	±9 (5)		
BX	32 (0) to 212 (100)	BX***	±7.6 (4.2)		
BX	32 (0) to 400 (200)	BX ALLOY***	±6.7 (3.7)		

* Thermocouple material is normally supplied to meet tolerances above 0C (32F). If material is required to meet tolerances below 0C (32F), the purchase order must so state. Special selection of material is required.

** Suggested initial calibration tolerance. Requirements should be discussed between purchaser and supplier.

*** Copper vs. copper can be used as an extension for Type B thermocouples if the transition is below 100C (212F). Above 100C (212F), PCLW30-6 alloy should be used as the positive extension wire.

THERMOCOUPLE WIRE

Fiberglass Insulated 950°F (510°C)

Applications

- Heat Treatment
- Temperature Sensors
- Steel and Aluminum ...Industry
- Plastic Processing ...Equipment
- Furnace Surveys
- Testing

Available Options

- Reduced Itch TuffbondTM ...Impregnation on Singles
- Stabilized Type K & ...Type E Conductors
- Fused PTFE Tape Moisture ...Barrier
- Double Glass Braid Insulation
- Twisted/Shielded Pair
- Metal Coverings
- Tighter Than Special Limit ...Accuracy Tolerances
- Special Color Codes
- Calibration Test Reports

Product Features

- Continuous use up to ...950F (510C)
- Single Exposure up to ...1200F (650C)
- Good Moisture, Chemical ...and Abrasion Resistance
- High Temperature Stability

Product Specifications

Conductors: Solid or stranded thermocouple wire per ASTM E230 & ANSI MC96.1

Insulation: Braided fiberglass with high temperature impregnation* (24 to 30 AWG Served Glass)

Construction: Parallel conductors

Jacket: Braided fiberglass with high temperature impregnation*

Operating Temperature: +950F (+510C) continuous +1200F (+650C) single exposure

Limits of Error: Conforms to ASTM E230, IEC 584 and ANSI MC 96.1

Color Code: Conforms to ASTM E230 and ANSI MC 96.1 (International Color Codes Available)

*Impregnation maintained to +400F (+200C)

Ordering Code

G / G [ ] - [ ] [ ] - [ ]

Optional Metal Coverings

- S = Stainless Steel Braid
- CU = Tinned Copper Braid
- I = Inconel Braid
- X = Half-Oval Galvanized Steel

Wire Size AWG or Metric

Add (F) for Stranded Wire

Calibration Grade Designation Per Table 1

Conductor Size		Insulation Thickness		Jacket Thickness		Outer Diameter		Net Weight	
AWG	(MM)	inches	(MM)	inches	(MM)	inches	(MM)	LB/MF	(KG/KM)
14	(1.63)	.007	(.18)	.010	(.25)	.100 x .180	(2.5 x 4.6)	29	(43)
16	(1.29)	.007	(.18)	.010	(.25)	.085 x .150	(2.2 x 3.8)	20	(30)
16F*	(1.47)	.007	(.18)	.010	(.25)	.094 x .168	(2.4 x 4.3)	22	(33)
18	(1.02)	.007	(.18)	.010	(.25)	.070 x .124	(1.8 x 3.2)	13	(19)
20	(0.81)	.006	(.15)	.006	(.15)	.056 x .100	(1.4 x 2.5)	7.7	(11)
20F*	(0.97)	.006	(.15)	.006	(.15)	.060 x .108	(1.5 x 2.7)	8.3	(12)
22	(0.64)	.006	(.15)	.006	(.15)	.049 x .086	(1.2 x 2.2)	5.4	(8.0)
24	(0.51)	.006	(.15)	.006	(.15)	.040 x .068	(1.0 x 1.7)	3.2	(4.8)

24F*	(0.61)	.006	(.15)	.006	(.15)	.048 x .084	(1.2 x 2.1)	3.4	(5.1)
26	(0.41)	.004	(.11)	.006	(.15)	.036 x .060	(0.9 x 1.5)	2.2	(3.3)
28	(0.32)	.004	(.11)	.006	(.15)	.033 x .054	(0.8 x 1.4)	1.7	(2.5)
30	(0.25)	.004	(.11)	.006	(.15)	.030 x .048	(0.8 x 1.2)	1.3	(1.9)

MANY ITEMS AVAILABLE FROM STOCK WITHIN 24 HOURS

The products referenced above represent the most popular constructions. Other constructions can be manufactured to meet individual specification and application requirements. Contact factory for additional information.

Table 1

Initial Calibration Tolerances Per ASTM E230 and ANSI MC96.1

			Tolerance-Reference Junction 32F (0C)		
Thermocouple Type	**Temperature Range F (C)**	**Grade Designation**	**Standard Grade Limits F (C) whichever is greater**	**Grade Designation**	**Special Grade Limits F (C) whichever is greater**
Thermocouple Wire					
T	32 (0) to 700 (370)	T	±1.8 (1) or ±0.75%	TT	±0.9 (0.5) or 0.4%
J	32 (0) to 1400 (760)	J	±4 (2.2) or ±0.75%	JJ	±2 (1.1) or 0.4%
E	32 (0) to 1600 (870)	E	±3.1 (1.7) or ±0.50%	EE	±1.8 (1) or 0.4%
K or N	32 (0) to 2300 (1260)	K or N	±4 (2.2) or ±0.75%	KK or NN	±2 (1.1) or 0.4%
T*	-328 (-200) to 32 (0)	T	±1.8 (1) or ±1.5%	TT	±0.9 (0.5) or 0.8%**
E*	-328 (-200) to 32 (0)	E	±3.1 (1.7) or ±1%	EE	±1.8 (1) or 0.5%**
K*	-328 (-200) to 32 (0)	K	±4 (2.2) or ±2%	KK	**
Extension Wire					
TX	32 (0) to 212 (100)	TX	±1.8 (1)	TTX	±0.9 (0.5)
JX	32 (0) to 400 (200)	JX	±4 (2.2)	JJX	±2 (1.1)
EX	32 (0) to 400 (200)	EX	±3.1 (1.7)	EEX	±1.8 (1)
KX or NX	32 (0) to 400 (200)	KX or NX	±4 (2.2)	KKX or NNX	±2 (1.1)
RX or SX	32 (0) to 400 (200)	RX or SX	±9 (5)		
BX	32 (0) to 212 (100)	BX***	±7.6 (4.2)		
BX	32 (0) to 400 (200)	BX ALLOY***	±6.7 (3.7)		

* Thermocouple material is normally supplied to meet tolerances above 0C (32F). If material is required to meet tolerances below 0C (32F), the purchase order must so state. Special selection of material is required.

** Suggested initial calibration tolerance. Requirements should be discussed between purchaser and supplier.

*** Copper vs. copper can be used as an extension for Type B thermocouples if the transition is below 100C (212F). Above 100C (212F), PCLW30-6 alloy should be used as the positive extension wire.

THERMOCOUPLE WIRE

Polyimide Tape Insulated 500°F (260°C)

Applications

- Aerospace Industry
- Power Generation
- Laboratories
- Petrochemical Plants
- Cryogenic Applications
- Pharmaceutical
- Autoclaves

Available Options

- Metal Overbraids
- Galvanized Half-Oval Armor
- Twisted/Shielded Pair
- Small Diameter HF/D-Overall
  ...Jacket One Insulated One
  ...Bare Conductor
- Special Color Codes
- Calibration Test Reports

Product Features

- Continuous use up ...to 500F (260C)
- Unaffected by Extreme or ...Rapid Temperature Variations
- Excellent Solvent Resistance
- Flame Retardant
- Resistant to Radiation
- Does Not Burn

Product Specifications

Conductors: Solid or stranded thermocouple wire per ASTM E230 & ANSI MC96.1

Insulation: Two layers of fused polyimide tape, color coded with a polyimide coating

Construction: Parallel conductors

Jacket: Two layers of fused polyimide tape

Operating Temperature: -400F (-240C) to +500F (+260C) continuous

Limits of Error: Conforms to ASTM E230, IEC 584 and ANSI MC 96.1

Color Code: Conforms to ASTM E230 and ANSI MC 96.1 (International Color Codes Available)

Ordering Code

K / K [ ] - [ ] [ ] - [ ]

Optional Metal Coverings
- S = Stainless Steel Braid
- CU = Tinned Copper Braid
- I = Inconel Braid
- X = Half-Oval Galvanized Steel

Wire Size AWG or Metric

Add (F) for Stranded Wire

Calibration Grade Designation Per Table 1

Conductor Size		Insulation Thickness		Jacket Thickness		Outer Diameter		Net Weight	
AWG	(MM)	inches	(MM)	inches	(MM)	inches	(MM)	LB/MF	(KG/KM)
14	(1.63)	.005	(.13)	.005	(.13)	.086 x .160	(2.2 x 4.1)	28	(42)
16	(1.29)	.005	(.13)	.005	(.13)	.071 x .132	(1.8 x 3.4)	18	(27)
16F*	(1.47)	.005	(.13)	.005	(.13)	.080 x .150	(2.0 x 3.8)	20	(30)
18	(1.02)	.005	(.13)	.005	(.13)	.060 x .110	(1.5 x 2.8)	11	(16)
20	(0.81)	.005	(.13)	.005	(.13)	.052 x .094	(1.3 x 2.4)	7.9	(11)
20F*	(0.97)	.005	(.13)	.005	(.13)	.058 x .106	(1.5 x 2.7)	8.2	(12)
22	(0.64)	.005	(.13)	.005	(.13)	.045 x .080	(1.1 x 2.0)	5.4	(8.0)
24	(0.51)	.005	(.13)	.005	(.13)	.040 x .070	(1.0 x 1.8)	3.7	(5.5)
24F*	(0.61)	.005	(.13)	.005	(.13)	.044 x .078	(1.1 x 2.0)	4.2	(6.2)
26	(0.41)	.005	(.13)	.005	(.13)	.036 x .062	(.91 x 1.6)	2.7	(4.0)

28	(0.32)	.005	(.13)	.005	(.13)	.033 x .056	(.84 x 1.4)	2.0	(3.0)
30	(0.25)	.005	(.13)	.005	(.13)	.030 x .050	(.76 x 1.3)	1.7	(2.5)

MANY ITEMS AVAILABLE FROM STOCK WITHIN 24 HOURS

The products referenced above represent the most popular constructions. Other constructions can be manufactured to meet individual specification and application requirements. Contact factory for additional information.

Table 1

Initial Calibration Tolerances Per ASTM E230 and ANSI MC96.1

			Tolerance-Reference Junction 32F (0C)		
Thermocouple Type	**Temperature Range F (C)**	**Grade Designation**	**Standard Grade Limits F (C) whichever is greater**	**Grade Designation**	**Special Grade Limits F (C) whichever is greater**
Thermocouple Wire					
T	32 (0) to 700 (370)	T	±1.8 (1) or ±0.75%	TT	±0.9 (0.5) or 0.4%
J	32 (0) to 1400 (760)	J	±4 (2.2) or ±0.75%	JJ	±2 (1.1) or 0.4%
E	32 (0) to 1600 (870)	E	±3.1 (1.7) or ±0.50%	EE	±1.8 (1) or 0.4%
K or N	32 (0) to 2300 (1260)	K or N	±4 (2.2) or ±0.75%	KK or NN	±2 (1.1) or 0.4%
T*	-328 (-200) to 32 (0)	T	±1.8 (1) or ±1.5%	TT	±0.9 (0.5) or 0.8%**
E*	-328 (-200) to 32 (0)	E	±3.1 (1.7) or ±1%	EE	±1.8 (1) or 0.5%**
K*	-328 (-200) to 32 (0)	K	±4 (2.2) or ±2%	KK	**
Extension Wire					
TX	32 (0) to 212 (100)	TX	±1.8 (1)	TTX	±0.9 (0.5)
JX	32 (0) to 400 (200)	JX	±4 (2.2)	JJX	±2 (1.1)
EX	32 (0) to 400 (200)	EX	±3.1 (1.7)	EEX	±1.8 (1)
KX or NX	32 (0) to 400 (200)	KX or NX	±4 (2.2)	KKX or NNX	±2 (1.1)
RX or SX	32 (0) to 400 (200)	RX or SX	±9 (5)		
BX	32 (0) to 212 (100)	BX***	±7.6 (4.2)		
BX	32 (0) to 400 (200)	BX ALLOY***	±6.7 (3.7)		

* Thermocouple material is normally supplied to meet tolerances above 0C (32F). If material is required to meet tolerances below 0C (32F), the purchase order must so state. Special selection of material is required.

** Suggested initial calibration tolerance. Requirements should be discussed between purchaser and supplier.

*** Copper vs. copper can be used as an extension for Type B thermocouples if the transition is below 100C (212F). Above 100C (212F), PCLW30-6 alloy should be used as the positive extension wire.

THERMOCOUPLE WIRE

PTFE Tape Insulated 500°F (260°C)

Applications

- Aerospace
- Power Generation
- Laboratories
- Petrochemical Plants
- Cryogenic Applications
- FDA Approved ...Applications
- Composites

Available Options

- Metal Overbraids
- Galvanized Half-Oval ...Armor
- Twisted/Shielded Pair
- Special Color Codes
- Calibration Test Reports

Product Features

- Continuous use up ...to 500F (260C)
- Excellent Solvent Resistance
- Flame Retardant
- Passes IEEE 383 Flame Test
- Passes VW-1 Flame Test
- Will Not Melt
- Abrasion Resistant

Product Specifications

Conductors:	Solid or stranded thermocouple wire per ASTM E230 & ANSI MC96.1
Insulation:	Two layers of fused fluoropolymer PTFE tape
Construction:	Parallel conductors
Jacket:	Two layers of fused fluoropolymer PTFE tape
Operating Temperature:	-328°F (-200°C) to +500F (+260C) continuous
Limits of Error:	Conforms to ASTM E230, IEC 584 and ANSI MC 96.1
Color Code:	Conforms to ASTM E230 and ANSI MC 96.1 (International Color Codes Available)

Ordering Code

TF / TF [ ] - [ ] [ ] - [ ]

- [ ]: Optional Metal Coverings
  - S = Stainless Steel Braid
  - CU = Tinned Copper Braid
  - I = Inconel Braid
  - X = Half-Oval Galvanized Steel
- [ ]: Wire Size AWG or Metric
- [ ]: Add (F) for Stranded Wire
- [ ]: Calibration Grade Designation Per Table 1

Conductor Size		Insulation Thickness		Jacket Thickness		Outer Diameter		Net Weight	
AWG	(MM)	inches	(MM)	inches	(MM)	inches	(MM)	LB/MF	(KG/KM)
14	(1.63)	.012	(.30)	.012	(.30)	.112 x .200	(2.8 x 5.1)	33	(49)
16	(1.29)	.012	(.30)	.012	(.30)	.099 x .174	(2.5 x 4.4)	23	(34)
16F*	(1.47)	.012	(.30)	.012	(.30)	.106 x .188	(2.7 x 4.8)	25	(37)
18	(1.02)	.012	(.30)	.012	(.30)	.088 x .152	(2.2 x 3.9)	15	(22)
20	(0.81)	.008	(.20)	.012	(.30)	.072 x .120	(1.8 x 3.0)	10	(15)
20F*	(0.97)	.008	(.20)	.012	(.30)	.078 x .132	(2.0 x 3.4)	11	(16)
22	(0.64)	.008	(.20)	.012	(.30)	.065 x .106	(1.7 x 2.7)	7.4	(11)
24	(0.51)	.008	(.20)	.012	(.30)	.060 x .096	(1.5 x 2.4)	5.2	(7.7)
24F*	(0.61)	.008	(.20)	.012	(.30)	.064 x .104	(1.6 x 2.6)	6.0	(8.9)
26	(0.41)	.008	(.20)	.012	(.30)	.056 x .088	(1.4 x 2.2)	4.3	(6.4)

28	(0.32)	.008	(.20)	.012	(.30)	.053 x .082	(1.3 x 2.1)	3.2	(4.8)
30	(0.25)	.008	(.20)	.012	(.30)	.050 x .076	(1.3 x 1.9)	2.8	(4.2)

MANY ITEMS AVAILABLE FROM STOCK WITHIN 24 HOURS

The products referenced above represent the most popular constructions. Other constructions can be manufactured to meet individual specification and application requirements. Contact factory for additional information.

Table 1

Initial Calibration Tolerances Per ASTM E230 and ANSI MC96.1

			Tolerance-Reference Junction 32F (0C)		
Thermocouple Type	**Temperature Range F (C)**	**Grade Designation**	**Standard Grade Limits F (C) whichever is greater**	**Grade Designation**	**Special Grade Limits F (C) whichever is greater**
Thermocouple Wire					
T	32 (0) to 700 (370)	T	±1.8 (1) or ±0.75%	TT	±0.9 (0.5) or 0.4%
J	32 (0) to 1400 (760)	J	±4 (2.2) or ±0.75%	JJ	±2 (1.1) or 0.4%
E	32 (0) to 1600 (870)	E	±3.1 (1.7) or ±0.50%	EE	±1.8 (1) or 0.4%
K or N	32 (0) to 2300 (1260)	K or N	±4 (2.2) or ±0.75%	KK or NN	±2 (1.1) or 0.4%
T*	-328 (-200) to 32 (0)	T	±1.8 (1) or ±1.5%	TT	±0.9 (0.5) or 0.8%**
E*	-328 (-200) to 32 (0)	E	±3.1 (1.7) or ±1%	EE	±1.8 (1) or 0.5%**
K*	-328 (-200) to 32 (0)	K	±4 (2.2) or ±2%	KK	**
Extension Wire					
TX	32 (0) to 212 (100)	TX	±1.8 (1)	TTX	±0.9 (0.5)
JX	32 (0) to 400 (200)	JX	±4 (2.2)	JJX	±2 (1.1)
EX	32 (0) to 400 (200)	EX	±3.1 (1.7)	EEX	±1.8 (1)
KX or NX	32 (0) to 400 (200)	KX or NX	±4 (2.2)	KKX or NNX	±2 (1.1)
RX or SX	32 (0) to 400 (200)	RX or SX	±9 (5)		
BX	32 (0) to 212 (100)	BX***	±7.6 (4.2)		
BX	32 (0) to 400 (200)	BX ALLOY***	±6.7 (3.7)		

* Thermocouple material is normally supplied to meet tolerances above 0C (32F). If material is required to meet tolerances below 0C (32F), the purchase order must so state. Special selection of material is required.

** Suggested initial calibration tolerance. Requirements should be discussed between purchaser and supplier.

*** Copper vs. copper can be used as an extension for Type B thermocouples if the transition is below 100C (212F). Above 100C (212F), PCLW30-6 alloy should be used as the positive extension wire.

THERMOCOUPLE WIRE
PFA Insulated 500°F (260°C)

Applications
- Temperature Sensors
- Aerospace
- Transportation
- Cryogenics
- Petrochemical Plants
- FDA Approved ...Applications
- Composites

Available Options
- Metal Overbraids
- Galvanized Half-Oval Armor
- Twisted/Shielded Pair
- Multi-Pair Cables
- Fiberglass Overbraid
- ETFE Insulation and Jacket ...Rated to 300F (150C)
- Special Color Codes
- Calibration Test Reports

Product Features
- Continuous use up to ...500F (260C)
- Excellent Chemical Resistance
- Excellent Electrical Properties
- Flame Retardant
- Passes IEEE 383 Flame Test
- Passes VW-1 Flame Test

Product Specifications

Conductors:	Solid or stranded thermocouple wire per ASTM E230 & ANSI MC96.1
Insulation:	Flame retardant extruded fluoropolymer PFA
Construction:	Parallel conductors
Jacket:	Flame retardant extruded fluoropolymer PFA
Operating Temperature:	-328F (-200C) to +500F (+260C) continuous
Limits of Error:	Conforms to ASTM E230, IEC 584 and ANSI MC 96.1
Color Code:	Conforms to ASTM E230 and ANSI MC 96.1 (International Color Codes Available)

Ordering Code

PFA / PFA [ ] - [ ] [ ] - [ ]

Optional Metal Coverings
- S = Stainless Steel Braid
- CU = Tinned Copper Braid
- I = Inconel Braid
- X = Half-Oval Galvanized Steel

Wire Size AWG or Metric

Add (F) for Stranded Wire

Calibration Grade Designation Per Table 1

Conductor Size		Insulation Thickness		Jacket Thickness		Outer Diameter		Net Weight	
AWG	(MM)	inches	(MM)	inches	(MM)	inches	(MM)	LB/MF	(KG/KM)
14	(1.63)	.008	(.20)	.010	(.25)	.104 x .188	(2.6 x 4.8)	34	(51)
16	(1.29)	.008	(.20)	.010	(.25)	.087 x .154	(2.2 x 3.9)	22	(33)
16F*	(1.47)	.008	(.20)	.010	(.25)	.094 x .168	(2.4 x 4.3)	24	(36)
18	(1.02)	.008	(.20)	.010	(.25)	.076 x .132	(1.9 x 3.4)	15	(22)
20	(0.81)	.008	(.20)	.010	(.25)	.068 x .116	(1.7 x 2.9)	11	(16)
20F*	(0.97)	.008	(.20)	.010	(.25)	.072 x .124	(1.8 x 3.1)	12	(18)
22	(0.64)	.008	(.20)	.010	(.25)	.061 x .102	(1.5 x 2.6)	7.6	(11)
24	(0.51)	.008	(.20)	.010	(.25)	.056 x .092	(1.4 x 2.3)	5.7	(8.5)
24F*	(0.61)	.008	(.20)	.010	(.25)	.060 x .100	(1.6 x 2.7)	6.2	(9.2)
26	(0.41)	.008	(.20)	.010	(.25)	.052 x .084	(1.3 x 2.1)	4.4	(6.5)

28	(0.32)	.008	(.20)	.010	(.25)	.049 x .078	(1.2 x 2.0)	3.7	(5.5)
30	(0.25)	.008	(.20)	.010	(.25)	.046 x .072	(1.2 x 1.8)	3.0	(4.5)

MANY ITEMS AVAILABLE FROM STOCK WITHIN 24 HOURS

The products referenced above represent the most popular constructions. Other constructions can be manufactured to meet individual specification and application requirements. Contact factory for additional information.

Table 1

Initial Calibration Tolerances Per ASTM E230 and ANSI MC96.1

			Tolerance-Reference Junction 32F (0C)		
Thermocouple Type	**Temperature Range F (C)**	**Grade Designation**	**Standard Grade Limits F (C) whichever is greater**	**Grade Designation**	**Special Grade Limits F (C) whichever is greater**
Thermocouple Wire					
T	32 (0) to 700 (370)	T	±1.8 (1) or ±0.75%	TT	±0.9 (0.5) or 0.4%
J	32 (0) to 1400 (760)	J	±4 (2.2) or ±0.75%	JJ	±2 (1.1) or 0.4%
E	32 (0) to 1600 (870)	E	±3.1 (1.7) or ±0.50%	EE	±1.8 (1) or 0.4%
K or N	32 (0) to 2300 (1260)	K or N	±4 (2.2) or ±0.75%	KK or NN	±2 (1.1) or 0.4%
T*	-328 (-200) to 32 (0)	T	±1.8 (1) or ±1.5%	TT	±0.9 (0.5) or 0.8%**
E*	-328 (-200) to 32 (0)	E	±3.1 (1.7) or ±1%	EE	±1.8 (1) or 0.5%**
K*	-328 (-200) to 32 (0)	K	±4 (2.2) or ±2%	KK	**
Extension Wire					
TX	32 (0) to 212 (100)	TX	±1.8 (1)	TTX	±0.9 (0.5)
JX	32 (0) to 400 (200)	JX	±4 (2.2)	JJX	±2 (1.1)
EX	32 (0) to 400 (200)	EX	±3.1 (1.7)	EEX	±1.8 (1)
KX or NX	32 (0) to 400 (200)	KX or NX	±4 (2.2)	KKX or NNX	±2 (1.1)
RX or SX	32 (0) to 400 (200)	RX or SX	±9 (5)		
BX	32 (0) to 212 (100)	BX***	±7.6 (4.2)		
BX	32 (0) to 400 (200)	BX ALLOY***	±6.7 (3.7)		

* Thermocouple material is normally supplied to meet tolerances above 0C (32F). If material is required to meet tolerances below 0C (32F), the purchase order must so state. Special selection of material is required.

** Suggested initial calibration tolerance. Requirements should be discussed between purchaser and supplier.

*** Copper vs. copper can be used as an extension for Type B thermocouples if the transition is below 100C (212F). Above 100C (212F), PCLW30-6 alloy should be used as the positive extension wire.

THERMOCOUPLE WIRE
FEP Insulated 400°F (200°C)

Applications
- Temperature Sensors
- Aerospace
- Transportation
- Cryogenics
- Petrochemical Plants
- FDA Approved ...Applications
- Composites

Available Options
- Metal Overbraids
- Galvanized Half-Oval Armor
- Twisted/Shielded Pair
- Multi-Pair Cables
- Fiberglass Overbraid
- UL Listed Constructions
- ETFE Insulation and Jacket ...Rated to 300F (150C)
- Special Color Codes
- Calibration Test Reports

Product Features
- Continuous use up ...to 400F (200C)
- Excellent Chemical Resistance
- Excellent Electrical Properties
- Flame Retardant
- Passes IEEE 383 Flame Test
- Passes VW-1 Flame Test

Product Specifications

Conductors: Solid or stranded thermocouple wire per ASTM E230 & ANSI MC96.1

Insulation: Flame retardant extruded fluoropolymer FEP

Construction: Parallel conductors

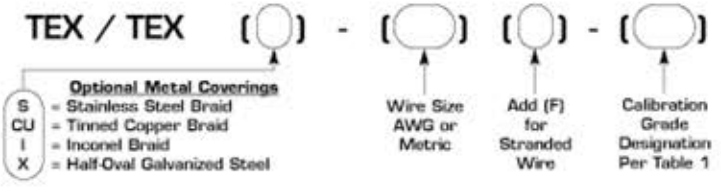
Jacket: Flame retardant extruded fluoropolymer FEP

Operating Temperature: -328F (-200C) to +400F (+200C) continuous

Limits of Error: Conforms to ASTM E230, IEC 584 and ANSI MC 96.1

Color Code: Conforms to ASTM E230 and ANSI MC 96.1 (International Color Codes Available)

Ordering Code



Conductor Size		Insulation Thickness		Jacket Thickness		Outer Diameter		Net Weight	
AWG	(MM)	inches	(MM)	inches	(MM)	inches	(MM)	LB/MF	(KG/KM)
14	(1.63)	.008	(.20)	.010	(.25)	.104 x .188	(2.6 x 4.8)	34	(51)
16	(1.29)	.008	(.20)	.010	(.25)	.087 x .154	(2.2 x 3.9)	22	(33)
16F*	(1.47)	.008	(.20)	.010	(.25)	.094 x .168	(2.4 x 4.3)	24	(36)
18	(1.02)	.008	(.20)	.010	(.25)	.076 x .132	(1.9 x 3.4)	15	(22)
20	(0.81)	.008	(.20)	.010	(.25)	.068 x .116	(1.7 x 2.9)	11	(16)
20F*	(0.97)	.008	(.20)	.010	(.25)	.072 x .124	(1.8 x 3.1)	12	(18)
22	(0.64)	.008	(.20)	.010	(.25)	.061 x .102	(1.5 x 2.6)	7.6	(11)
24	(0.51)	.008	(.20)	.010	(.25)	.056 x .092	(1.4 x 2.3)	5.7	(8.5)
24F*	(0.61)	.008	(.20)	.010	(.25)	.060 x .100	(1.6 x 2.7)	6.2	(9.2)
26	(0.41)	.008	(.20)	.010	(.25)	.052 x .084	(1.3 x 2.1)	4.4	(6.5)

28	(0.32)	.008	(.20)	.010	(.25)	.049 x .078	(1.2 x 2.0)	3.7	(5.5)
30	(0.25)	.008	(.20)	.010	(.25)	.046 x .072	(1.2 x 1.8)	3.0	(4.5)

MANY ITEMS AVAILABLE FROM STOCK WITHIN 24 HOURS

The products referenced above represent the most popular constructions. Other constructions can be manufactured to meet individual specification and application requirements. Contact factory for additional information.

Table 1

Initial Calibration Tolerances Per ASTM E230 and ANSI MC96.1

			Tolerance-Reference Junction 32F (0C)		
Thermocouple Type	**Temperature Range F (C)**	**Grade Designation**	**Standard Grade Limits F (C) whichever is greater**	**Grade Designation**	**Special Grade Limits F (C) whichever is greater**
Thermocouple Wire					
T	32 (0) to 700 (370)	T	±1.8 (1) or ±0.75%	TT	±0.9 (0.5) or 0.4%
J	32 (0) to 1400 (760)	J	±4 (2.2) or ±0.75%	JJ	±2 (1.1) or 0.4%
E	32 (0) to 1600 (870)	E	±3.1 (1.7) or ±0.50%	EE	±1.8 (1) or 0.4%
K or N	32 (0) to 2300 (1260)	K or N	±4 (2.2) or ±0.75%	KK or NN	±2 (1.1) or 0.4%
T*	-328 (-200) to 32 (0)	T	±1.8 (1) or ±1.5%	TT	±0.9 (0.5) or 0.8%**
E*	-328 (-200) to 32 (0)	E	±3.1 (1.7) or ±1%	EE	±1.8 (1) or 0.5%**
K*	-328 (-200) to 32 (0)	K	±4 (2.2) or ±2%	KK	**
Extension Wire					
TX	32 (0) to 212 (100)	TX	±1.8 (1)	TTX	±0.9 (0.5)
JX	32 (0) to 400 (200)	JX	±4 (2.2)	JJX	±2 (1.1)
EX	32 (0) to 400 (200)	EX	±3.1 (1.7)	EEX	±1.8 (1)
KX or NX	32 (0) to 400 (200)	KX or NX	±4 (2.2)	KKX or NNX	±2 (1.1)
RX or SX	32 (0) to 400 (200)	RX or SX	±9 (5)		
BX	32 (0) to 212 (100)	BX***	±7.6 (4.2)		
BX	32 (0) to 400 (200)	BX ALLOY***	±6.7 (3.7)		

* Thermocouple material is normally supplied to meet tolerances above 0C (32F). If material is required to meet tolerances below 0C (32F), the purchase order must so state. Special selection of material is required.

** Suggested initial calibration tolerance. Requirements should be discussed between purchaser and supplier.

*** Copper vs. copper can be used as an extension for Type B thermocouples if the transition is below 100C (212F). Above 100C (212F), PCLW30-6 alloy should be used as the positive extension wire.

THERMOCOUPLE WIRE

Twisted FEP Insulated 400°F (200°C)

Applications

- Temperature Sensors
- Aerospace
- Transportation
- Cryogenics
- Autoclaves
- FDA Approved ...Applications
- Composites

Available Options

- Metal Overbraids
- Galvanized Half-Oval Armor
- Tight Lay Lengths
- Multi-Pair Cables
- ETFE Insulation ...Rated to 300F (150C)
- Special Color Codes
- Calibration Test Reports

Product Features

- Continuous use up ...to 400F (200C)
- Excellent Chemical Resistance
- Excellent Electrical Properties
- Flame Retardant
- Passes IEEE 383 Flame Test
- Passes VW-1 Flame Test

Product Specifications

Conductors:	Solid or stranded thermocouple wire per ASTM E230 & ANSI MC96.1
Insulation:	Flame retardant extruded fluoropolymer FEP
Construction:	Twisted conductors
Lay Length:	1-1/2" (38MM) to 2-1/2" (64MM)
Operating Temperature:	-328F (-200C) to +400F (+200C) continuous
Limits of Error:	Conforms to ASTM E230, IEC 584 and ANSI MC 96.1
Color Code:	Conforms to ASTM E230 and ANSI MC 96.1 (International Color Codes Available)

Ordering Code

TEX / TW [ ] - [ ] [ ] - [ ]

Optional Metal Coverings
- S = Stainless Steel Braid
- CU = Tinned Copper Braid
- I = Inconel Braid
- X = Half-Oval Galvanized Steel

Wire Size AWG or Metric

Add (F) for Stranded Wire

Calibration Grade Designation Per Table 1

Conductor Size		Insulation Thickness		Jacket Thickness		Outer Diameter		Net Weight	
AWG	(MM)	inches	(MM)	inches	(MM)	inches	(MM)	LB/MF	(KG/KM)
16	(1.29)	.008	(.20)	2-1/2	(64)	.134	(3.4)	19	(28)
16F*	(1.47)	.008	(.20)	2-1/2	(64)	.148	(3.8)	21	(31)
18	(1.02)	.008	(.20)	2	(51)	.112	(2.8)	12	(18)
20	(0.81)	.008	(.20)	2	(51)	.096	(2.4)	8.3	(12)
20F*	(0.97)	.008	(.20)	2	(51)	.104	(2.6)	9.2	(14)
22	(0.64)	.008	(.20)	2	(51)	.082	(2.1)	5.6	(8.3)
24	(0.51)	.008	(.20)	1-1/2	(38)	.072	(1.8)	4.3	(6.4)
24F*	(0.61)	.008	(.20)	1-1/2	(38)	.080	(2.0)	4.8	(7.1)
26	(0.41)	.008	(.20)	1-1/2	(38)	.064	(1.6)	3.1	(4.6)

28	(0.32)	.008	(.20)	1-1/2	(38)	.058	(1.5)	2.0	(3.0)
30	(0.25)	.008	(.20)	1-1/2	(38)	.052	(1.3)	1.5	(2.2)

MANY ITEMS AVAILABLE FROM STOCK WITHIN 24 HOURS

The products referenced above represent the most popular constructions. Other constructions can be manufactured to meet individual specification and application requirements. Contact factory for additional information.

Table 1

Initial Calibration Tolerances Per ASTM E230 and ANSI MC96.1

			Tolerance-Reference Junction 32F (0C)		
Thermocouple Type	**Temperature Range F (C)**	**Grade Designation**	**Standard Grade Limits F (C) whichever is greater**	**Grade Designation**	**Special Grade Limits F (C) whichever is greater**
Thermocouple Wire					
T	32 (0) to 700 (370)	T	±1.8 (1) or ±0.75%	TT	±0.9 (0.5) or 0.4%
J	32 (0) to 1400 (760)	J	±4 (2.2) or ±0.75%	JJ	±2 (1.1) or 0.4%
E	32 (0) to 1600 (870)	E	±3.1 (1.7) or ±0.50%	EE	±1.8 (1) or 0.4%
K or N	32 (0) to 2300 (1260)	K or N	±4 (2.2) or ±0.75%	KK or NN	±2 (1.1) or 0.4%
T*	-328 (-200) to 32 (0)	T	±1.8 (1) or ±1.5%	TT	±0.9 (0.5) or 0.8%**
E*	-328 (-200) to 32 (0)	E	±3.1 (1.7) or ±1%	EE	±1.8 (1) or 0.5%**
K*	-328 (-200) to 32 (0)	K	±4 (2.2) or ±2%	KK	**
Extension Wire					
TX	32 (0) to 212 (100)	TX	±1.8 (1)	TTX	±0.9 (0.5)
JX	32 (0) to 400 (200)	JX	±4 (2.2)	JJX	±2 (1.1)
EX	32 (0) to 400 (200)	EX	±3.1 (1.7)	EEX	±1.8 (1)
KX or NX	32 (0) to 400 (200)	KX or NX	±4 (2.2)	KKX or NNX	±2 (1.1)
RX or SX	32 (0) to 400 (200)	RX or SX	±9 (5)		
BX	32 (0) to 212 (100)	BX***	±7.6 (4.2)		
BX	32 (0) to 400 (200)	BX ALLOY***	±6.7 (3.7)		

* Thermocouple material is normally supplied to meet tolerances above 0C (32F). If material is required to meet tolerances below 0C (32F), the purchase order must so state. Special selection of material is required.

** Suggested initial calibration tolerance. Requirements should be discussed between purchaser and supplier.

*** Copper vs. copper can be used as an extension for Type B thermocouples if the transition is below 100C (212F). Above 100C (212F), PCLW30-6 alloy should be used as the positive extension wire.

THERMOCOUPLE WIRE
Nylon Insulated 250°F (121°C)

Applications
- Temperature Sensors
- Testing
- Laboratories
- Heating and Air Conditioning
- General Industry

Available Options
- Metal Overbraids
- Galvanized Half-Oval Armor
- Twisted/Shielded Pair
- Multi-Pair Cables
- Special Color Codes
- Calibration Test Reports

Product Features
- Continuous use up to 250F (121C)
- Excellent Abrasion Resistance
- Good Chemical and Solvent Resistance
- Excellent Dielectric Strength
- Small Compact Size

Product Specifications

Conductors: Solid or stranded thermocouple wire per ASTM E230 & ANSI MC96.1

Insulation: Nylon polyamide resin

Construction: Parallel conductors

Jacket: Nylon polyamide resin

Operating Temperature: -85F (-65C) to +250F (+121C) continuous

Limits of Error: Conforms to ASTM E230, IEC 584 and ANSI MC 96.1

Color Code: Conforms to ASTM E230 and ANSI MC 96.1 (International Color Codes Available)

Ordering Code

N / N [ ] - [ ] [ ] - [ ]

Optional Metal Coverings
- S = Stainless Steel Braid
- CU = Tinned Copper Braid
- I = Inconel Braid
- X = Half-Oval Galvanized Steel

Wire Size AWG or Metric

Add (F) for Stranded Wire

Calibration Grade Designation Per Table 1

Conductor Size		Insulation Thickness		Jacket Thickness		Outer Diameter		Net Weight	
AWG	(MM)	inches	(MM)	inches	(MM)	inches	(MM)	LB/MF	(KG/KM)
12	(2.05)	.008	(.20)	.008	(.20)	.113 x .210	(2.9 x 5.3)	43	(64)
14	(1.63)	.006	(.15)	.008	(.20)	.092 x .168	(2.3 x 4.3)	29	(43)
14F*	(1.80)	.006	(.15)	.008	(.20)	.100 x .184	(2.5 x 4.7)	31	(46)
16	(1.29)	.006	(.15)	.008	(.20)	.079 x .142	(2.0 x 3.6)	18	(27)
16F*	(1.47)	.006	(.15)	.008	(.20)	.086 x .156	(2.2 x 4.0)	21	(31)
18	(1.02)	.006	(.15)	.008	(.20)	.068 x .120	(1.7 x 3.0)	12	(18)
18F*	(1.22)	.006	(.15)	.008	(.20)	.074 x .132	(1.9 x 3.4)	13	(19)
20	(0.81)	.005	(.13)	.008	(.20)	.058 x .100	(1.5 x 2.5)	7.8	(12)
20F*	(0.97)	.005	(.13)	.008	(.20)	.062 x .108	(1.6 x 2.7)	8.9	(13)
22	(0.64)	.005	(.13)	.006	(.15)	.048 x .084	(1.2 x 2.1)	5.0	(7.4)

24	(0.51)	.005	(.13)	.006	(.15)	.042 x .072	(1.1 x 1.8)	3.3	(4.9)
24F*	(0.61)	.005	(.13)	.006	(.15)	.046 x .080	(1.2 x 2.0)	3.7	(5.5)

MANY ITEMS AVAILABLE FROM STOCK WITHIN 24 HOURS

The products referenced above represent the most popular constructions. Other constructions can be manufactured to meet individual specification and application requirements. Contact factory for additional information.

Table 1

Initial Calibration Tolerances Per ASTM E230 and ANSI MC96.1

			Tolerance-Reference Junction 32F (0C)		
Thermocouple Type	**Temperature Range F (C)**	**Grade Designation**	**Standard Grade Limits F (C) whichever is greater**	**Grade Designation**	**Special Grade Limits F (C) whichever is greater**
Thermocouple Wire					
T	32 (0) to 700 (370)	T	±1.8 (1) or ±0.75%	TT	±0.9 (0.5) or 0.4%
J	32 (0) to 1400 (760)	J	±4 (2.2) or ±0.75%	JJ	±2 (1.1) or 0.4%
E	32 (0) to 1600 (870)	E	±3.1 (1.7) or ±0.50%	EE	±1.8 (1) or 0.4%
K or N	32 (0) to 2300 (1260)	K or N	±4 (2.2) or ±0.75%	KK or NN	±2 (1.1) or 0.4%
T*	-328 (-200) to 32 (0)	T	±1.8 (1) or ±1.5%	TT	±0.9 (0.5) or 0.8%**
E*	-328 (-200) to 32 (0)	E	±3.1 (1.7) or ±1%	EE	±1.8 (1) or 0.5%**
K*	-328 (-200) to 32 (0)	K	±4 (2.2) or ±2%	KK	**
Extension Wire					
TX	32 (0) to 212 (100)	TX	±1.8 (1)	TTX	±0.9 (0.5)
JX	32 (0) to 400 (200)	JX	±4 (2.2)	JJX	±2 (1.1)
EX	32 (0) to 400 (200)	EX	±3.1 (1.7)	EEX	±1.8 (1)
KX or NX	32 (0) to 400 (200)	KX or NX	±4 (2.2)	KKX or NNX	±2 (1.1)
RX or SX	32 (0) to 400 (200)	RX or SX	±9 (5)		
BX	32 (0) to 212 (100)	BX***	±7.6 (4.2)		
BX	32 (0) to 400 (200)	BX ALLOY***	±6.7 (3.7)		

* Thermocouple material is normally supplied to meet tolerances above 0C (32F). If material is required to meet tolerances below 0C (32F), the purchase order must so state. Special selection of material is required.

** Suggested initial calibration tolerance. Requirements should be discussed between purchaser and supplier.

*** Copper vs. copper can be used as an extension for Type B thermocouples if the transition is below 100C (212F). Above 100C (212F), PCLW30-6 alloy should be used as the positive extension wire.

THERMOCOUPLE WIRE
PVC Insulated 221°F (105°C)

Applications
- Temperature Sensors
- Testing
- Laboratories
- Heating and Air Conditioning
- General Industry

Available Options
- Continuous use up to ...221F (105C)
- Flame Retardant
- Good Moisture, Chemical ...and Solvent Resistance
- Excellent Dielectric Strength
- Economical Construction

Product Features
- Metal Overbraids
- Galvanized Half-Oval Armor
- Nylon Jackets
- Twisted/Shielded Pair
- Multi-Pair Cables
- Cotton Overbraid
- TPE Insulation and Jacket ...Rated to 250F (125C)
- Special Color Codes

Product Specifications

Conductors: Solid or stranded thermocouple wire per ASTM E230 & ANSI MC96.1

Insulation: Flame retardant PVC

Construction: Parallel conductors

Jacket: Flame retardant PVC

Operating Temperature: -15F (-26C) to +221F (+105C) continuous

Limits of Error: Conforms to ASTM E230, IEC 584 and ANSI MC 96.1

Color Code: Conforms to ASTM E230 and ANSI MC 96.1 (International Color Codes Available)

Ordering Code

P / P [ ] - [ ] [ ] - [ ]

Optional Metal Coverings
- S = Stainless Steel Braid
- CU = Tinned Copper Braid
- I = Inconel Braid
- X = Half-Oval Galvanized Steel

Wire Size AWG or Metric

Add (F) for Stranded Wire

Calibration Grade Designation Per Table 1

Conductor Size		Insulation Thickness		Jacket Thickness		Outer Diameter		Net Weight	
AWG	(MM)	inches	(MM)	inches	(MM)	inches	(MM)	LB/MF	(KG/KM)
12	(2.05)	.020	(.51)	.020	(.51)	.161 x .282	(4.1 x 7.2)	57	(85)
14	(1.63)	.015	(.38)	.015	(.38)	.124 x .218	(3.1 x 5.5)	34	(51)
14F*	(1.80)	.015	(.38)	.015	(.38)	.132 x .234	(3.4 x 5.9)	38	(57)
16	(1.29)	.015	(.38)	.015	(.38)	.111 x .192	(2.8 x 4.9)	24	(36)
16F*	(1.47)	.015	(.38)	.015	(.38)	.118 x .206	(3.0 x 5.2)	26	(39)
18	(1.02)	.015	(.38)	.015	(.38)	.100 x .170	(2.5 x 4.3)	17	(25)
18F*	(1.22)	.015	(.38)	.015	(.38)	.108 x .186	(2.7 x 4.7)	18	(27)
20	(0.81)	.015	(.38)	.015	(.38)	.092 x .154	(2.3 x 3.9)	14	(21)
20F*	(0.97)	.015	(.38)	.015	(.38)	.096 x .162	(2.4 x 4.1)	15	(22)
22	(0.64)	.015	(.38)	.015	(.38)	.085 x .140	(2.2 x 3.6)	8.1	(13)

24	(0.51)	.015	(.38)	.015	(.38)	.080 x .130	(2.0 x 3.3)	7.1	(11)
24F*	(0.61)	.015	(.38)	.015	(.38)	.084 x .138	(2.1 x 3.5)	7.6	(12)

MANY ITEMS AVAILABLE FROM STOCK WITHIN 24 HOURS

The products referenced above represent the most popular constructions. Other constructions can be manufactured to meet individual specification and application requirements. Contact factory for additional information.

Table 1

Initial Calibration Tolerances Per ASTM E230 and ANSI MC96.1

			Tolerance-Reference Junction 32F (0C)		
Thermocouple Type	**Temperature Range F (C)**	**Grade Designation**	**Standard Grade Limits F (C) whichever is greater**	**Grade Designation**	**Special Grade Limits F (C) whichever is greater**
Thermocouple Wire					
T	32 (0) to 700 (370)	T	±1.8 (1) or ±0.75%	TT	±0.9 (0.5) or 0.4%
J	32 (0) to 1400 (760)	J	±4 (2.2) or ±0.75%	JJ	±2 (1.1) or 0.4%
E	32 (0) to 1600 (870)	E	±3.1 (1.7) or ±0.50%	EE	±1.8 (1) or 0.4%
K or N	32 (0) to 2300 (1260)	K or N	±4 (2.2) or ±0.75%	KK or NN	±2 (1.1) or 0.4%
T*	-328 (-200) to 32 (0)	T	±1.8 (1) or ±1.5%	TT	±0.9 (0.5) or 0.8%**
E*	-328 (-200) to 32 (0)	E	±3.1 (1.7) or ±1%	EE	±1.8 (1) or 0.5%**
K*	-328 (-200) to 32 (0)	K	±4 (2.2) or ±2%	KK	**
Extension Wire					
TX	32 (0) to 212 (100)	TX	±1.8 (1)	TTX	±0.9 (0.5)
JX	32 (0) to 400 (200)	JX	±4 (2.2)	JJX	±2 (1.1)
EX	32 (0) to 400 (200)	EX	±3.1 (1.7)	EEX	±1.8 (1)
KX or NX	32 (0) to 400 (200)	KX or NX	±4 (2.2)	KKX or NNX	±2 (1.1)
RX or SX	32 (0) to 400 (200)	RX or SX	±9 (5)		
BX	32 (0) to 212 (100)	BX***	±7.6 (4.2)		
BX	32 (0) to 400 (200)	BX ALLOY***	±6.7 (3.7)		

* Thermocouple material is normally supplied to meet tolerances above 0C (32F). If material is required to meet tolerances below 0C (32F), the purchase order must so state. Special selection of material is required.

** Suggested initial calibration tolerance. Requirements should be discussed between purchaser and supplier.

*** Copper vs. copper can be used as an extension for Type B thermocouples if the transition is below 100C (212F). Above 100C (212F), PCLW30-6 alloy should be used as the positive extension wire.

THERMOCOUPLE WIRE

PVC Insulated Rip Cord 221°F (105°C)

Applications

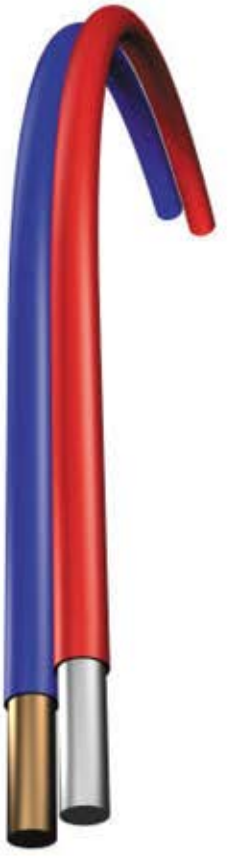
- Temperature Sensors
- Testing
- Laboratories
- Transportation
- Heating and ...Air Conditioning
- Appliances
- Validation

Available Options

- Tighter than Special Limit ...Accuracy Tolerances
- Special Color Codes
- Calibration Test Reports

Product Features

- Continuous use up ...to 221F (105C)
- Flame Retardant
- Small Compact Size
- Individual Insulation ...Color Coded
- Economical Construction
- Flexible
- Rip Design for Easy ...Conductor Seperation



Product Specifications

Conductors:	Solid or stranded thermocouple wire per ASTM E230 & ANSI MC96.1
Insulation:	Flame retardant PVC
Construction:	Parallel conductors bonded together
Operating Temperature:	-15F (-26C) to +221F (+105C) continuous
Limits of Error:	Conforms to ASTM E230, IEC 584 and ANSI MC 96.1
Color Code:	Conforms to ASTM E230 and ANSI MC 96.1 (International Color Codes Available)

Ordering Code

P - [ ] [ ] - [ ]

- [ ] — Wire Size AWG or Metric
- [ ] — Add (F) for Stranded Wire
- [ ] — Calibration Grade Designation Per Table 1

Conductor Size		Insulation Thickness		Outer Diameter		Net Weight	
AWG	(MM)	inches	(MM)	inches	(MM)	LB/MF	(KG/KM)
14	(1.63)	.012	(.30)	.088 x .176	(2.2 x 4.5)	29	(43)
14F*	(1.80)	.012	(.30)	.100 x .200	(2.5 x 5.1)	32	(48)
16	(1.29)	.012	(.30)	.075 x .150	(1.9 x 3.8)	19	(28)
16F*	(1.47)	.012	(.30)	.084 x .168	(2.1 x 4.2)	22	(33)
18	(1.02)	.012	(.30)	.064 x .128	(1.6 x 3.3)	12	(18)
18F*	(1.22)	.012	(.30)	.072 x .144	(1.8 x 3.7)	14	(21)
20	(0.81)	.010	(.25)	.052 x .104	(1.3 x 2.6)	7.8	(12)
20F*	(0.97)	.010	(.25)	.058 x .116	(1.5 x 2.9)	8.4	(13)
22	(0.64)	.010	(.25)	.045 x .090	(1.1 x 2.3)	5.3	(7.9)
24	(0.51)	.010	(.25)	.040 x .080	(1.0 x 2.0)	3.5	(5.2)
24F*	(0.61)	.010	(.25)	.044 x .088	(1.1 x 2.2)	3.8	(5.7)

26	(0.41)	.010	(.25)	.036 x .072	(.91 x 1.8)	2.5	(3.7)

MANY ITEMS AVAILABLE FROM STOCK WITHIN 24 HOURS

The products referenced above represent the most popular constructions. Other constructions can be manufactured to meet individual specification and application requirements. Contact factory for additional information.

Table 1

Initial Calibration Tolerances Per ASTM E230 and ANSI MC96.1

			Tolerance-Reference Junction 32F (0C)		
Thermocouple Type	**Temperature Range F (C)**	**Grade Designation**	**Standard Grade Limits F (C) whichever is greater**	**Grade Designation**	**Special Grade Limits F (C) whichever is greater**
Thermocouple Wire					
T	32 (0) to 700 (370)	T	±1.8 (1) or ±0.75%	TT	±0.9 (0.5) or 0.4%
J	32 (0) to 1400 (760)	J	±4 (2.2) or ±0.75%	JJ	±2 (1.1) or 0.4%
E	32 (0) to 1600 (870)	E	±3.1 (1.7) or ±0.50%	EE	±1.8 (1) or 0.4%
K or N	32 (0) to 2300 (1260)	K or N	±4 (2.2) or ±0.75%	KK or NN	±2 (1.1) or 0.4%
T*	-328 (-200) to 32 (0)	T	±1.8 (1) or ±1.5%	TT	±0.9 (0.5) or 0.8%**
E*	-328 (-200) to 32 (0)	E	±3.1 (1.7) or ±1%	EE	±1.8 (1) or 0.5%**
K*	-328 (-200) to 32 (0)	K	±4 (2.2) or ±2%	KK	**
Extension Wire					
TX	32 (0) to 212 (100)	TX	±1.8 (1)	TTX	±0.9 (0.5)
JX	32 (0) to 400 (200)	JX	±4 (2.2)	JJX	±2 (1.1)
EX	32 (0) to 400 (200)	EX	±3.1 (1.7)	EEX	±1.8 (1)
KX or NX	32 (0) to 400 (200)	KX or NX	±4 (2.2)	KKX or NNX	±2 (1.1)
RX or SX	32 (0) to 400 (200)	RX or SX	±9 (5)		
BX	32 (0) to 212 (100)	BX***	±7.6 (4.2)		
BX	32 (0) to 400 (200)	BX ALLOY***	±6.7 (3.7)		

* Thermocouple material is normally supplied to meet tolerances above 0C (32F). If material is required to meet tolerances below 0C (32F), the purchase order must so state. Special selection of material is required.

** Suggested initial calibration tolerance. Requirements should be discussed between purchaser and supplier.

*** Copper vs. copper can be used as an extension for Type B thermocouples if the transition is below 100C (212F). Above 100C (212F), PCLW30-6 alloy should be used as the positive extension wire.

THERMOCOUPLE WIRE

Shielded PVC Insulated 221°F (105°C)

Applications

- Temperature Sensors
- Testing
- Laboratories
- New Plant Construction
- General Industry

Available Options

- Metal Overbraids
- Multi-Pair Cables
- UL Listed Constructions
- TPE Insulation and Jacket ...Rated to 250F (125C)
- Special Color Codes
- Calibration Test Reports

Product Features

- Continuous use up to ...221F (105C)
- Flame Retardant
- Good Moisture, Chemical ...and Solvent Resistance
- Excellent Dielectric Strength
- 100% Continuous ...Drain/Shield Contact
- Economical Construction

Product Specifications

Conductors:	Solid or stranded thermocouple wire per ASTM E230 & ANSI MC96.1
Insulation:	Flame retardant PVC
Construction:	Single twisted pair
Pair Shield:	.002"(.05MM) aluminum/polyester tape, 25% overlap
Pair Drain Wire:	7-strand tinned copper, 2 AWG sizes smaller than conductor (24 AWG smallest drain)
Jacket:	Flame retardant PVC with ripcord under jacket
Operating Temperature:	-15F (-26C) to +221F (+105C) continuous
Limits of Error:	Conforms to ASTM E230, IEC 584 and ANSI MC 96.1
Color Code:	Conforms to ASTM E230 and ANSI MC 96.1 (International Color Codes Available)

Ordering Code

P/ALPTW [ ] - [ ] [ ] - [ ]

Optional Metal Coverings

- S = Stainless Steel Braid
- CU = Tinned Copper Braid
- I = Inconel Braid
- X = Half-Oval Galvanized Steel

Wire Size AWG or Metric

Add (F) for Stranded Wire

Calibration Grade Designation Per Table 1

Conductor Size		Insulation Thickness		Jacket Thickness		Outer Diameter		Net Weight	
AWG	(MM)	inches	(MM)	inches	(MM)	inches	(MM)	LB/MF	(KG/KM)
12	(2.05)	.020	(.51)	.025	(.64)	.308	(7.8)	77	(115)
14	(1.63)	.020	(.51)	.025	(.64)	.274	(7.0)	54	(80)
14F*	(1.80)	.020	(.51)	.025	(.64)	.290	(7.4)	60	(89)
16	(1.29)	.015	(.38)	.020	(.51)	.218	(5.5)	35	(52)
16F*	(1.47)	.015	(.38)	.020	(.51)	.232	(5.9)	38	(57)
18	(1.02)	.015	(.38)	.020	(.51)	.196	(5.0)	25	(37)
18F*	(1.22)	.015	(.38)	.020	(.51)	.208	(5.3)	27	(40)
20	(0.81)	.015	(.38)	.020	(.51)	.180	(4.6)	18	(27)

20F*	(0.97)	.015	(.38)	.020	(.51)	.188	(4.8)	20	(30)
22	(0.64)	.015	(.38)	.020	(.51)	.166	(4.2)	16	(24)
24	(0.51)	.015	(.38)	.020	(.51)	.156	(4.0)	12	(18)
24F*	(0.61)	.015	(.38)	.020	(.51)	.164	(4.1)	13	(19)

MANY ITEMS AVAILABLE FROM STOCK WITHIN 24 HOURS

The products referenced above represent the most popular constructions. Other constructions can be manufactured to meet individual specification and application requirements. Contact factory for additional information.

Table 1

Initial Calibration Tolerances Per ASTM E230 and ANSI MC96.1

			Tolerance-Reference Junction 32F (0C)		
Thermocouple Type	**Temperature Range F (C)**	**Grade Designation**	**Standard Grade Limits F (C) whichever is greater**	**Grade Designation**	**Special Grade Limits F (C) whichever is greater**
Thermocouple Wire					
T	32 (0) to 700 (370)	T	±1.8 (1) or ±0.75%	TT	±0.9 (0.5) or 0.4%
J	32 (0) to 1400 (760)	J	±4 (2.2) or ±0.75%	JJ	±2 (1.1) or 0.4%
E	32 (0) to 1600 (870)	E	±3.1 (1.7) or ±0.50%	EE	±1.8 (1) or 0.4%
K or N	32 (0) to 2300 (1260)	K or N	±4 (2.2) or ±0.75%	KK or NN	±2 (1.1) or 0.4%
T*	-328 (-200) to 32 (0)	T	±1.8 (1) or ±1.5%	TT	±0.9 (0.5) or 0.8%**
E*	-328 (-200) to 32 (0)	E	±3.1 (1.7) or ±1%	EE	±1.8 (1) or 0.5%**
K*	-328 (-200) to 32 (0)	K	±4 (2.2) or ±2%	KK	**
Extension Wire					
TX	32 (0) to 212 (100)	TX	±1.8 (1)	TTX	±0.9 (0.5)
JX	32 (0) to 400 (200)	JX	±4 (2.2)	JJX	±2 (1.1)
EX	32 (0) to 400 (200)	EX	±3.1 (1.7)	EEX	±1.8 (1)
KX or NX	32 (0) to 400 (200)	KX or NX	±4 (2.2)	KKX or NNX	±2 (1.1)
RX or SX	32 (0) to 400 (200)	RX or SX	±9 (5)		
BX	32 (0) to 212 (100)	BX***	±7.6 (4.2)		
BX	32 (0) to 400 (200)	BX ALLOY***	±6.7 (3.7)		

* Thermocouple material is normally supplied to meet tolerances above 0C (32F). If material is required to meet tolerances below 0C (32F), the purchase order must so state. Special selection of material is required.

** Suggested initial calibration tolerance. Requirements should be discussed between purchaser and supplier.

*** Copper vs. copper can be used as an extension for Type B thermocouples if the transition is below 100C (212F). Above 100C (212F), PCLW30-6 alloy should be used as the positive extension wire.