BUCAN ELECTRIC HEATING DEVICES INC.

TEMPERATURE SENSORS

Thermocouples

A thermocouple is a temperature sensor made of two dissimilar metal wires that form a junction at one end. As the temperature of the junction varies, the millivolt output (generated by the temperature gradient along the wires) is interpreted by a temperature controller. There are different types of thermocouples; each type has a different combination of metals that makes it suitable for a specific temperature range and environment. The most common are the J, K, T, E and N types. The section of a thermocouple that is used to monitor temperature is usually protected with a metallic shell. The wire junction is either exposed out of the shell-tip, internally attached to the sealed shell-tip (grounded), or isolated from the sealed metal casing (ungrounded). The metallic protective shell can be filled with compacted MgO. This construction (MI style) gives structural strength and durability. MI thermocouples can be welded or brazed to heating element sheathes and can also be field-bent to suit specialized mountings. Additionally, thermocouples can have a basic tube-and-wire construction (TW style) which is mostly used in the plastics industry. Many optional mounting arrangements are available with this style; these include bayonet mount, adjustable depth, nozzle melt, and ring or shim mounting.

RTD's

Resistance Temperature Detectors (RTDs) are sensors that have resistors which change resistance with temperature variations. A controller monitors that change and converts it to temperature. Several different materials are used to make RTDs, the most common being platinum. RTDs are available in two basic constructions; the thin-film (-150°F to 1000°F) and the wire-wound (-250°F to 1100°F). RTDs can come with 2, 3 or 4 lead wires. The ones with 3 or 4 wires can have relatively long lead lengths without loss of temperature accuracy.

BUCAN TEMPERATURE SENSORS

Bucan Thermocouples can be made in the configurations shown below with basic Tube & Wire or Mineral Insulated designs. Most of the designs can be manufactured with the use of RTDs as well. The two first characters of each style part number shows the nature of the sensor. TW stands for (Tube and Wire thermocouple), MI for (Mineral insulated Thermocouple), RT for (tube and wire RTD) and RM for (Mineral insulated RTD). Standard Bucan RTD sensors use Class B platinum RTDs that have 0.00385 Ohm/Ohm/°C TCR (Temperature coefficient of resistance).

Ring Lug

	Chart 1	Chart 4	Chart 5	Chart 6	Chart 10	Chart 11
TW01	Calib.	Junc.	Wire Type	Wire Length	Term.	Ring Type

Screw Tip

	Chart 1	Chart 4	Chart 5	Chart 6	Chart 9	Chart 10	Chart 12
TW02	Calib.	Junc.	Wire Type	Wire Length	Tip	Term.	Thread

Shim Style

	Chart 1	Chart 4	Chart 5	Chart 6	Chart 10	Chart 13
TW03	Calib.	Junc.	Wire Type	Wire Length	Term.	Shim

Spring Bayonet

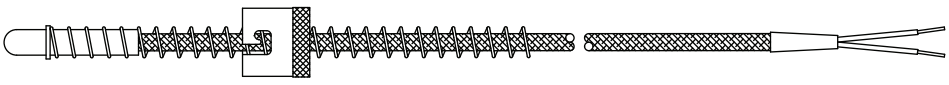

	Chart 1	Chart 16	Chart 2	Chart 3	Chart 4	Chart 5	Chart 6	Chart 7	Chart 8	Chart 9	Chart 10
TW04 MI04	Calib.	N/A	Diam.	Length	Junc.	Wire Type	Wire Length	Cap	Spring	Tip	Term.
RT04	N/A	Ohms	Diam.	Length	NA	Wire Type	Wire Length	Cap	Spring	Tip	Term.

Armor Bayonet

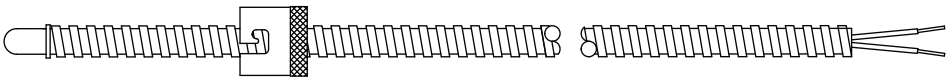

	Chart 1	Chart 16	Chart 2	Chart 3	Chart 4	Chart 5	Chart 6	Chart 7	Chart 9	Chart 10
TW05 MI05	Calibr.	N/A	Diam.	Length	Junc.	Wire Type	Wire Length	Cap	Tip	Term.
RT05	N/A	Ohms	Diam.	Length	NA	Wire Type	Wire Length	Cap	Tip	Term.

BUCAN TEMPERATURE SENSORS

The charts below are to be used in combination with **page 108**. They offer the standard choices available to our overall product line of Thermocouples and RTDs. Other options may be available and some details to refine your probe could be required. If a feature is not available here, please contact our sales / engineering team with the closest version available and discuss the feature you need.

Chart 1	
Calibration	
J	Type J
K	Type K
T	Type T
E	Type E
N	Type N

Chart 2	
Probe Diameters	
6	0.06"
9	0.09"
13	.125"
19	.188"
25	.250"
X	Specify

Chart 3	
Probe Length	
A	0.125
B	0.25
C	0.375
D	0.5
E	0.625
F	0.75
G	0.875

Chart 4	
Junction	
G	Grounded
U	UnGrounded
D	Dual Ground
X	Dual UnGround

Chart 5	
Wire Type	
FF	FBG / FBG
TT	TEF / TEF
BF	Braid / FBG
BT	Braid / TEF
AF	Armor / FBG
AT	Armor / TEF

Chart 6	
Wire Length	
Whole Inch	012 - 999
3 digits - Leading Zero	

Chart 7	
Cap	
S	12.5 mm
C	Custom
X	Specify

Chart 8	
Spring	
1	1"
2	2"
3	6"
4	12"
X	Specify

Chart 9	
Tip	
F	Flat
R	Round
D	Drill Point
X	Specify

Chart 10	
Termination / Wire End	
1	Split Leads / 2"
2	Spade Lugs
3	Standard Plug
4	Hight Temp Plug
5	Mini Plug
6	Standard Jack
7	Ring Lugs
8	Terminal Block
9	Nema 1 Head
X	Specify

Chart 11	
Ring Size	
L	#6 - .147 Hole
M	#8 - .173 Hole
N	#10 - .198 Hole
P	1/4" - .263 Hole
R	5/16" - .336 Hole
S	3/8" - .393 Hole
X	Specify

Chart 12	
Threads	
1	1/4 - 28 Free
2	1/4 - 28 Fixed
3	1/4 - 20 Free
4	1/4 - 20 Fixed
5	8 - 32 Free
6	8 - 32 Fixed
7	10 - 32 Free
8	10 - 32 Fixed
9	Specify

Chart 13	
Shim Sizes	
W	1/2" x 1/2"
X	3/4" x 3/4"
Y	1" x 1"
Z	Custom

Chart 16	
Ohms / Construction	
A	100 Ohm Film
B	500 Ohm Film
C	1000 Ohm Film
D	100 Ohm Coil
E	500 Ohm Coil
F	1000 Ohm Coil
X	Specify

BUCAN TEMPERATURE SENSORS

Basic Mini

	Chart 1	Chart 2	Chart 15	Chart 4	Chart 5	Chart 6	Chart 9	Chart 10
MI06	Calib.	Diameter	Length	Junc.	Wire Type	Wire Length	Tip	Term.

Standard Probe

	Chart 1	Chart 16	Chart 2	Chart 15	Chart 4	Chart 5	Chart 6	Chart 9	Chart 10
TW07 MI07	Calib.	N/A	Diam.	Length	Junc.	Wire Type	Wire Length	Tip	Term.
RT07 RM07	N/A	Ohms	Diam.	Length	NA	Wire Type	Wire Length	Tip	Term.

Fixed Bayonet

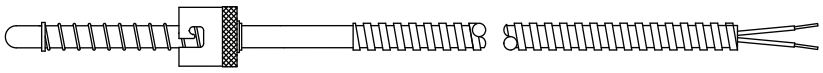

	Chart 1	Chart 16	Chart 2	Chart 15	Chart 4	Chart 5	Chart 6	Chart 7	Chart 9	Chart 10
TW07S MI07S	Calibr.	N/A	Diam.	Length	Junc.	Wire Type	Wire Length	Cap	Tip	Term.
RT07S RM07S	N/A	Ohms	Diam.	Length	NA	Wire Type	Wire Length	Cap	Tip	Term.

Compression Fitting

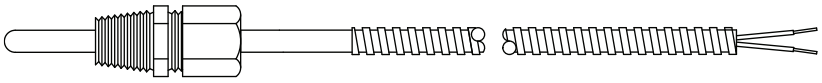

	Chart 1	Chart 16	Chart 2	Chart 15	Chart 4	Chart 5	Chart 6	Chart 9	Chart 10	Chart 17
TW07C MI07C	Calibr.	N/A	Diam.	Length	Junc.	Wire Type	Wire Length	Tip	Term.	Fitting
RT07C RM07C	N/A	Ohms	Diam.	Length	NA	Wire Type	Wire Length	Tip	Term.	Fitting

Standard 45°

	Chart 1	Chart 16	Chart 2	Chart 15	Chart 4	Chart 5	Chart 6	Chart 9	Chart 10
TW08 MI08	Calib.	N/A	Diam.	Length	Junc.	Wire Type	Wire Length	Tip	Term.
RT08 RM08	N/A	Ohms	Diam.	Length	NA	Wire Type	Wire Length	Tip	Term.

BUCAN TEMPERATURE SENSORS

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Chart 1	
Calibration	
J	Type J
K	Type K
T	Type T
E	Type E
N	Type N

Chart 2	
Probe Diameters	
6	0.06"
9	0.09"
13	.125"
19	.188"
25	.250"
X	Specify

Chart 4	
Junction	
G	Grounded
U	UnGrounded
D	Dual Ground
X	Dual UnGround

Chart 5	
Wire Type	
FF	FBG / FBG
TT	TEF / TEF
BF	Braid / FBG
BT	Braid / TEF
AF	Armor / FBG
AT	Armor / TEF

Chart 6	
Wire Length	
Whole Inch	012 - 999
3 digits - Leading Zero	

Chart 7	
Cap	
S	12.5 mm
C	Custom
X	Specify

Chart 9	
Tip	
F	Flat
R	Round
D	Drill Point
X	Specify

Chart 10	
Termination / Wire End	
1	Split Leads / 2"
2	Spade Lugs
3	Standard Plug
4	Hight Temp Plug
5	Mini Plug
6	Standard Jack
7	Ring Lugs
8	Terminal Block
9	Nema 1 Head
X	Specify

Chart 15	
Sheath Length / Wire Length	
Whole Inch	01 - 99
2 digits - Leading Zero	

Chart 16	
Ohms / Construction	
A	100 Ohm Film
B	500 Ohm Film
C	1000 Ohm Film
D	100 Ohm Coil
E	500 Ohm Coil
F	1000 Ohm Coil
X	Specify

Chart 17	
Compression Fitting	
1	1/8" NPT
2	1/4" NPT
3	3/8" NPT
4	1/2" NPT
X	Specify

Thermocouples Versus RTDs

Criteria	RTDs	Thermocouples
Recommended Temperature Range	-300°F to 1000°F	-300°F to 2300°F
Accuracy (Typical)	Excellent (+/-0.3°F to +/-2°F)	Medium (+/-1°F to +/-10°F)
Stability	Extremely stable (0.1°F drift/Year)	Variable
Response time	Slow (1-50 sec)	Fast (0.1 to 10 sec)
Linearity	Almost linear	Non-linear
Mechanical Shock / Vibration	Not Suitable	Suitable
Electrical Noise Problems	Limited Susceptibility	Susceptible
Excitation	Yes	Non
Cost	High	Low

BUCAN TEMPERATURE SENSORS

Fixed Boyonet 45°

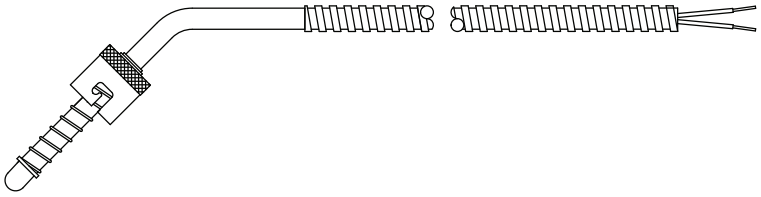

	Chart 1	Chart 16	Chart 2	Chart 15	Chart 4	Chart 5	Chart 6	Chart 7	Chart 9	Chart 10
TW08S MI08S	Calibr.	N/A	Diam.	Length	Junc.	Wire Type	Wire Length	Cap	Tip	Term.
RT08S RM08S	N/A	Ohms	Diam.	Length	NA	Wire Type	Wire Length	Cap	Tip	Term.

Compression Fitting 45°

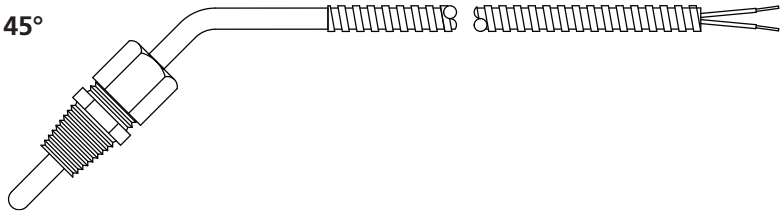

	Chart 1	Chart 16	Chart 2	Chart 15	Chart 4	Chart 5	Chart 6	Chart 9	Chart 10	Chart 17
TW08C MI08C	Calibr.	N/A	Diam.	Length	Junc.	Wire Type	Wire Length	Tip	Term.	Fitting
RT08C RM08C	N/A	Ohms	Diam.	Length	NA	Wire Type	Wire Length	Tip	Term.	Fitting

Standard 90°

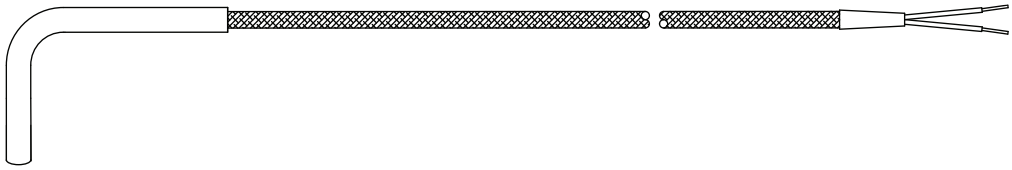

	Chart 1	Chart 16	Chart 2	Chart 15	Chart 4	Chart 5	Chart 6	Chart 9	Chart 10
TW09 MI09	Calib.	N/A	Diam.	Length	Junc.	Wire Type	Wire Length	Tip	Term.
RT09 RM09	N/A	Ohms	Diam.	Length	NA	Wire Type	Wire Length	Tip	Term.

Fixed Bayonet 90°

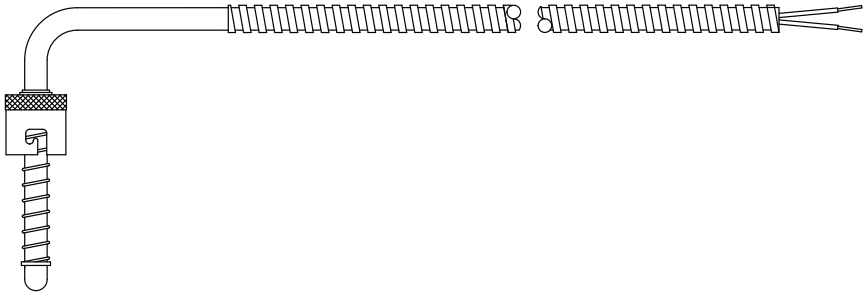

	Chart 1	Chart 16	Chart 2	Chart 15	Chart 4	Chart 5	Chart 6	Chart 7	Chart 9	Chart 10
TW09S MI09S	Calibr.	N/A	Diam.	Length	Junc.	Wire Type	Wire Length	Cap	Tip	Term.
RT09S RM09S	N/A	Ohms	Diam.	Length	NA	Wire Type	Wire Length	Cap	Tip	Term.

BUCAN TEMPERATURE SENSORS

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Chart 1	
Calibration	
J	Type J
K	Type K
T	Type T
E	Type E
N	Type N

Chart 2	
Probe Diameters	
6	0.06"
9	0.09"
13	.125"
19	.188"
25	.250"
X	Specify

Chart 4	
Junction	
G	Grounded
U	UnGrounded
D	Dual Ground
X	Dual UnGround

Chart 5	
Wire Type	
FF	FBG / FBG
TT	TEF / TEF
BF	Braid / FBG
BT	Braid / TEF
AF	Armor / FBG
AT	Armor / TEF

Chart 6	
Wire Length	
Whole Inch	012 - 999
3 digits - Leading Zero	

Chart 7	
Cap	
S	12.5 mm
C	Custom
X	Specify

Chart 9	
Tip	
F	Flat
R	Round
D	Drill Point
X	Specify

Chart 10	
Termination / Wire End	
1	Split Leads / 2"
2	Spade Lugs
3	Standard Plug
4	Hight Temp Plug
5	Mini Plug
6	Standard Jack
7	Ring Lugs
8	Terminal Block
9	Nema 1 Head
X	Specify

Chart 15	
Sheath Length / Wire Length	
Whole Inch	01 - 99
2 digits - Leading Zero	

Chart 16	
Ohms / Construction	
A	100 Ohm Film
B	500 Ohm Film
C	1000 Ohm Film
D	100 Ohm Coil
E	500 Ohm Coil
F	1000 Ohm Coil
X	Specify

Chart 17	
Compression Fitting	
1	1/8" NPT
2	1/4" NPT
3	3/8" NPT
4	1/2" NPT
X	Specify

Wiring Tips

- To be cost-effective, thermocouple extension wires can be of a lower grade (have lower ambient temperature limits), but they should be of the same material as the thermocouple wires. For long distances between sensing points and instruments, (100 ft. or more), transmitters can be used.
- Copper terminal blocks as well as lugs or splices can be used in a thermocouple circuit, provided that the negative and the positive legs are at the same temperature.
- Standard copper wires are used as RTD extension wires. Two-wire RTDs should be used only for short runs. For long runs, it is preferable to use 3 or 4 wire RTDs. For distances longer than 100 ft, using transmitters could be a solution.
- The insulation of thermocouple and RTD wires should be compatible with the environment in which they will be used.
- As the electrical signals generated by thermocouples and RTDs are very low, it is recommended to shield their extension wires.
- Thermocouple and RTD wires should not run in conduits that contain power lines.

BUCAN TEMPERATURE SENSORS

Compression Fitting 90°

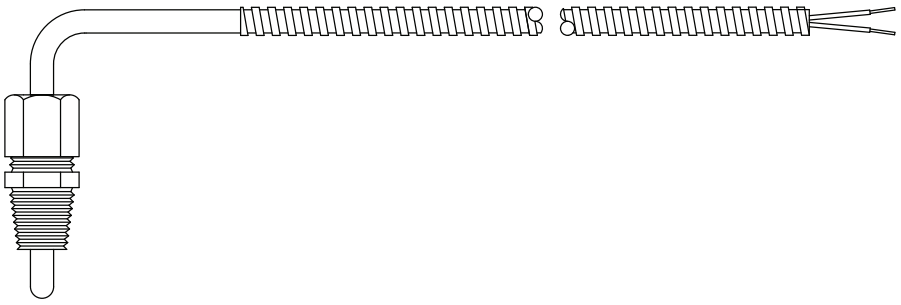

	Chart 1	Chart 16	Chart 2	Chart 15	Chart 4	Chart 5	Chart 6	Chart 9	Chart 10	Chart 17
TW09C MI09C	Calibr.	N/A	Diam.	Length	Junc.	Wire Type	Wire Length	Tip	Term.	Fitting
RT09C RM09C	N/A	Ohms	Diam.	Length	NA	Wire Type	Wire Length	Tip	Term.	Fitting

Rigid Probe Plug

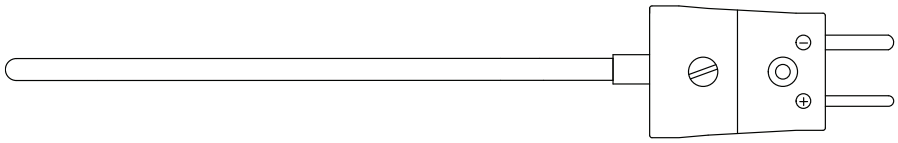

	Chart 1	Chart 16	Chart 2	Chart 4	Chart 15
TW10P MI10P	Calib.	N/A	Diam.	Junc.	Length
RT10P RM10P	N/A	Ohms	Diam.	NA	Length

Rigid Probe Jack

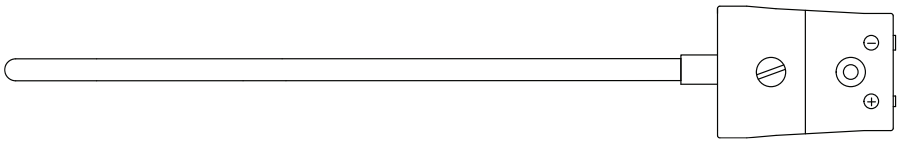

	Chart 1	Chart 16	Chart 2	Chart 4	Chart 15
TW10J MI10J	Calib.	N/A	Diam.	Junc.	Length
RT10J RM10J	N/A	Ohms	Diam.	NA	Length

Rigid Probe Terminal Block

	Chart 1	Chart 16	Chart 2	Chart 4	Chart 15
TW10T MI10T	Calib.	N/A	Diam.	Junc.	Length
RT10T RM10T	N/A	Ohms	Diam.	NA	Length

BUCAN TEMPERATURE SENSORS

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Chart 1	
Calibration	
J	Type J
K	Type K
T	Type T
E	Type E
N	Type N

Chart 2	
Probe Diameters	
6	0.06"
9	0.09"
13	.125"
19	.188"
25	.250"
X	Specify

Chart 4	
Junction	
G	Grounded
U	UnGrounded
D	Dual Ground
X	Dual UnGround

Chart 5	
Wire Type	
FF	FBG / FBG
TT	TEF / TEF
BF	Braid / FBG
BT	Braid / TEF
AF	Armor / FBG
AT	Armor / TEF

Chart 6	
Wire Length	
Whole Inch	012 - 999
3 digits - Leading Zero	

Chart 9	
Tip	
F	Flat
R	Round
D	Drill Point
X	Specify

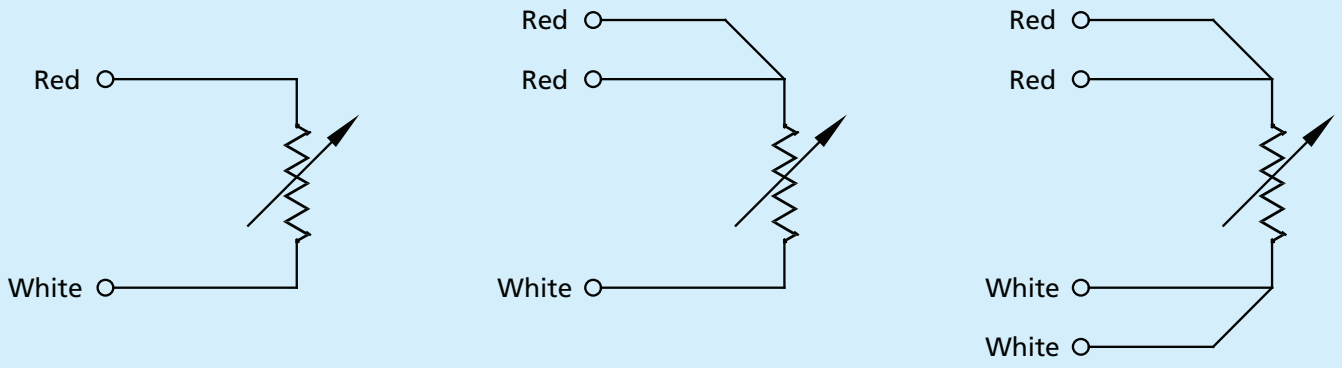
Chart 10	
Terminetion / Wire End	
1	Split Leads / 2"
2	Spade Lugs
3	Standard Plug
4	Hight Temp Plug
5	Mini Plug
6	Standard Jack
7	Ring Lugs
8	Terminal Block
9	Nema 1 Head
X	Specify

Chart 15	
Sheath Length / Wire Length	
Whole Inch	01 - 99
2 digits - Leading Zero	

Chart 16	
Ohms / Construction	
A	100 Ohm Film
B	500 Ohm Film
C	1000 Ohm Film
D	100 Ohm Coil
E	500 Ohm Coil
F	1000 Ohm Coil
X	Specify

Chart 17	
Compression Fitting	
1	1/8" NPT
2	1/4" NPT
3	3/8" NPT
4	1/2" NPT
X	Specify

Two, three and four wire configurations for RTDs



BUCAN TEMPERATURE SENSORS

Fixed NPT

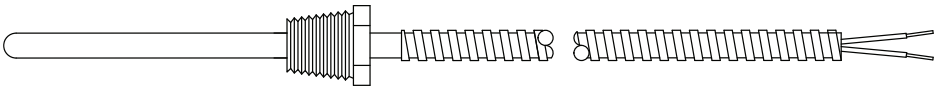


	Chart 1	Chart 16	Chart 2	Chart 4	Chart 5	Chart 6	Chart 10	Chart 14	Chart 15
TW11 MI11	Calib.	N/A	Diam.	Junc.	Wire Type	Wire Length	Term.	Fitting	Length
RT11 RM11	N/A	Ohms	Diam.	NA	Wire Type	Wire Length	Term.	Fitting	Length

Spring Loaded NPT

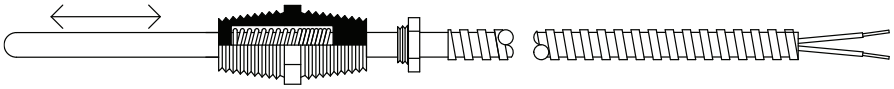


	Chart 1	Chart 16	Chart 2	Chart 4	Chart 5	Chart 6	Chart 10	Chart 14	Chart 15
TW12 MI12	Calib.	N/A	Diam.	Junc.	Wire Type	Wire Length	Term.	Fitting	Length
RT12 RM12	N/A	Ohms	Diam.	NA	Wire Type	Wire Length	Term.	Fitting	Length

Hose Clamp Style

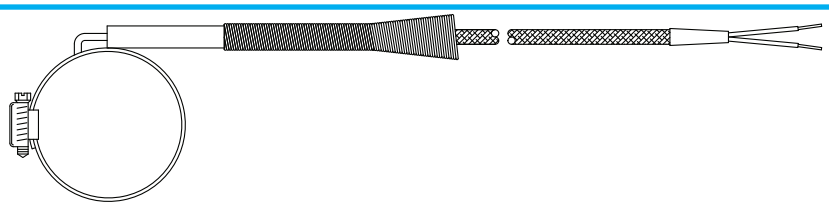


	Chart 1	Chart 5	Chart 6	Chart 10	Chart 19
TW13 MI13	Calib.	Wire Type	Wire Length	Term.	Size

Melt Bolt Style

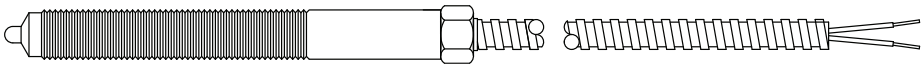


	Chart 1	Chart 16	Chart 2	Chart 4	Chart 5	Chart 6	Chart 10	Chart 18	Chart 20
TW14 MI14	Calib.	N/A	Diam.	Junc.	Wire Type	Wire Length	Term.	Plug	Size
RT14 RM14	N/A	Ohms	Diam.	NA	Wire Type	Wire Length	Term.	Plug	Size

Magnet Mount

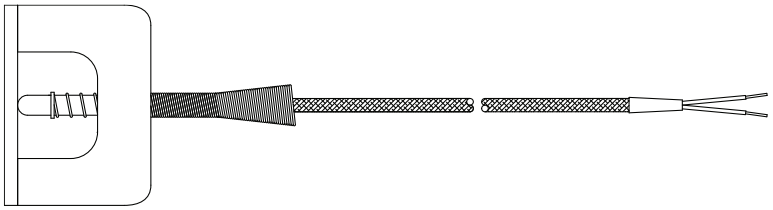


	Chart 1	Chart 16	Chart 2	Chart 15	Chart 4	Chart 5	Chart 6	Chart 7	Chart 9	Chart 10
TW15 MI15	Calibr.	N/A	Diam.	Length	Junc.	Wire Type	Wire Length	Cap	Tip	Term.
RT15 RT15	N/A	Ohms	Diam.	Length	NA	Wire Type	Wire Length	Cap	Tip	Term.

BUCAN TEMPERATURE SENSORS

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Probe Diameters	
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13	.125"
19	.188"
25	.250"
X	Specify

Chart 4	
Junction	
G	Grounded
U	UnGrounded
D	Dual Ground
X	Dual UnGround

Chart 5	
Wire Type	
FF	FBG / FBG
TT	TEF / TEF
BF	Braid / FBG
BT	Braid / TEF
AF	Armor / FBG
AT	Armor / TEF

Chart 6	
Wire Length	
Whole Inch	012 - 999
3 digits - Leading Zero	

Chart 7	
Cap	
S	12.5 mm
C	Custom
X	Specify

Chart 9	
Tip	
F	Flat
R	Round
D	Drill Point
X	Specify

Chart 10	
Termination / Wire End	
1	Split Leads / 2"
2	Spade Lugs
3	Standard Plug
4	Hight Temp Plug
5	Mini Plug
6	Standard Jack
7	Ring Lugs
8	Terminal Block
9	Nema 1 Head
X	Specify

Chart 14	
Fitting	
1	1/8" NPT
2	1/4" NPT
3	3/8" NPT
4	1/2" NPT
5	Dual 1/8" NPT
6	Dual 1/4" NPT
7	Dual 3/8" NPT
8	Dual 1/2" NPT
X	Specify

Chart 15	
Sheath Length / Wire Length	
Whole Inch	01 - 99
2 digits - Leading Zero	

Chart 16	
Ohms / Construction	
A	100 Ohm Film
B	500 Ohm Film
C	1000 Ohm Film
D	100 Ohm Coil
E	500 Ohm Coil
F	1000 Ohm Coil
X	Specify

Chart 18	
Plug Type	
A	Standard Plug
B	Mini Plug
C	High Temp Standard
D	High Temp mini
E	Standard Jack
F	Mini jack
X	Specify

Chart 19	
Hose Clamp Size	
1	7/32" - 5/8"
2	1/2" - 29/32"
3	9/16" - 1 1/16"
4	11/16" - 1 1/4"
5	15/16" - 1 1/2"
6	1 3/16" - 1 3/4"
7	1 7/15" - 2"
8	1 11/16" - 2 1/4"
9	1 15/16" - 2 1/2"
X	Specify

Chart 20	
1/2 - 20 UNF Thread	
3	3" Bolt
4	4" Bolt
6	6" Bolt
9	9" Bolt
12	12" Bolt
X	Specify

BUCAN TEMPERATURE SENSORS

Rigid Housing (Style 16)

Rigid NPT Housing (Style 17)

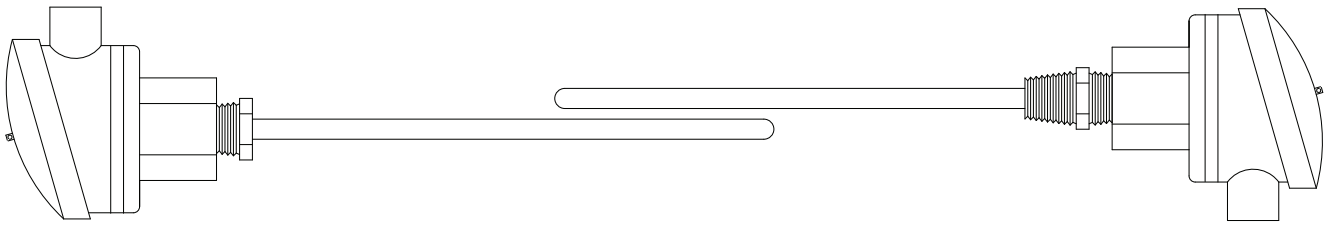


	Chart 1	Chart 16	Chart 2	Chart 4	Chart 14	Chart 15	Chart 21
TW16 / TW17 MI16 / MI17	Calib.	N/A	Diam.	Junc.	Fitting	Probe Length	Housing
RT16 / RT17 RM16 / RM17	NA	Ohms	Diam.	NA	Fitting	Probe Length	Housing

Rigid Pipe Extension

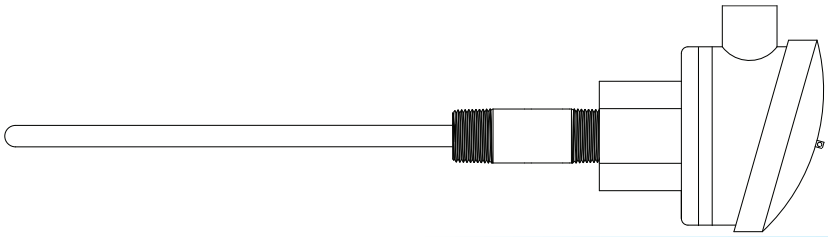


	Chart 1	Chart 16	Chart 2	Chart 4	Chart 14	Chart 15	Chart 15	Chart 21
TW018 MI018	Calib.	N/A	Diam.	Junc.	Fitting	Probe Length	Ext. Length	Housing
RT018 RM018	N/A	Ohms	Diam.	NA	Fitting	Probe Length	Ext. Length	Housing

Rigid Union

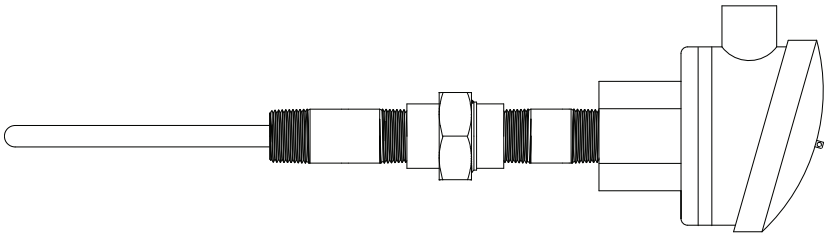


	Chart 1	Chart 16	Chart 2	Chart 4	Chart 14	Chart 15	Chart 15	Chart 21
TW019 MI019	Calib.	N/A	Diam.	Junc.	Fitting	Probe Length	Ext. Length	Housing
RT019 RM019	N/A	Ohms	Diam.	NA	Fitting	Probe Length	Ext. Length	Housing

Protection Tube

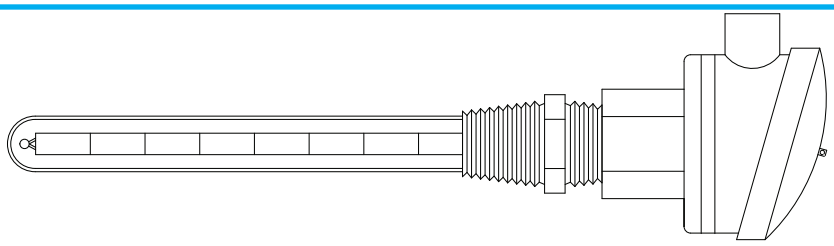


	Chart 1	Chart 2	Chart 4	Chart 14	Chart 15	Chart 21
TW20 MI20	Calib.	Diam.	Junc.	Fitting	Tube Length	Housing

BUCAN TEMPERATURE SENSORS

The charts below are to be used in combination with **page 116**. They offer the standard choices available to our overall product line of Thermocouples and RTDs. Other options may be available and some details to refine your probe could be required. If a feature is not available here, please contact our sales / engineering team with the closest version available and discuss the feature you need.

Chart 1	
Calibration	
J	Type J
K	Type K
T	Type T
E	Type E
N	Type N

Chart 2	
Probe Diameters	
6	0.06"
9	0.09"
13	.125"
19	.188"
25	.250"
X	Specify

Chart 4	
Junction	
G	Grounded
U	UnGrounded
D	Dual Ground
X	Dual UnGround

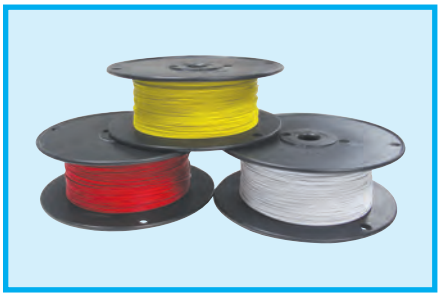
Chart 14	
Fitting	
1	1/8" NPT
2	1/4" NPT
3	3/8" NPT
4	1/2" NPT
5	Dual 1/8" NPT
6	Dual 1/4" NPT
7	Dual 3/8" NPT
8	Dual 1/2" NPT
X	Specify

Chart 15	
Sheath Length / Wire Length	
Whole Inch	01 - 99
2 digits - Leading Zero	

Chart 16	
Ohms / Construction	
A	100 Ohm Film
B	500 Ohm Film
C	1000 Ohm Film
D	100 Ohm Coil
E	500 Ohm Coil
F	1000 Ohm Coil
X	Specify

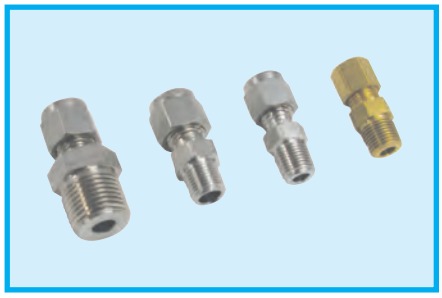
Chart 21	
Housing	
A	Standard
B	Aluminum
C	Polypropylene
X	Specify

Accessories

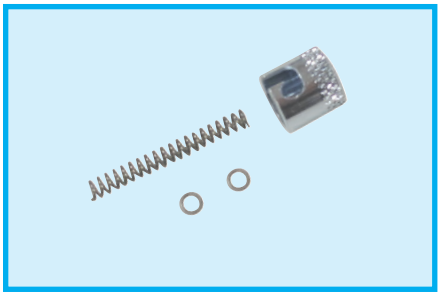


Thermocouple Wire

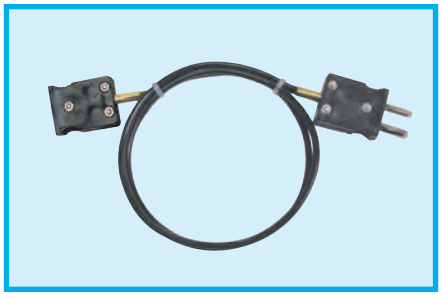
Bayonet Adapters



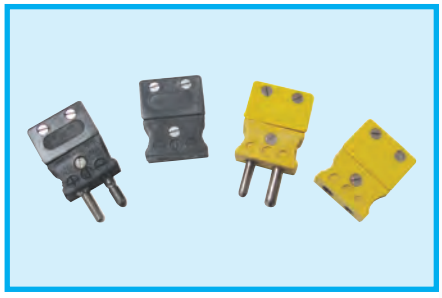
Compression Fittings



Bayonet Caps



Extension Wires



Thermocouple Plugs

BUCAN TEMPERATURE SENSORS

Thermocouples

The tables below show recommended temperatures, environments, accuracies as well as color codes. It's good to know that maximum temperatures are defined not only by the type of a thermocouple but also by the gauge of its wire.

Type	Composition		Temp. Range °F (Rec.)	Application suitability (Bare Wire)
	Positive leg	Negative leg		
J	Fe	55% Cu 45% Ni	32 to 1400	Vacuum,reducing or inert atmospheres. Limited use in oxidizing atmospheres (heavy gauges).
K	90% Ni 10% Cr	95% Ni, 2% Al 2% Mg, 1% Si	32 to 2300	Used mostly above 1000°F. Oxidizing and inert atmospheres. Not used in vacuum or low-oxygen atmospheres.
T	Cu	55% Cu 45% Ni	-300 to 700	Recommended for moist atmospheres. Vacuum, oxidizing, reducing or inert atmospheres.
E	95% Ni, 2% Al 2% Mg, 1% Si	55% Cu 45% Ni	32 to 1500	High EMF output per degree. Suitable for oxidizing and inert atmospheres.
N	84.1% Ni,14.4% Cr 14% Si, 0.1% Mg	95.5% Ni, 4.4% Si 0.1% Mg	32 to 2300	Alternative to "K" type thermocouples. High resistance to oxidation.

Type	Temp. °F Versus Accuracy		Max. Temp (Rec.) For Thermocouple Probe Diam. & Wire Gauges				Neg. Leg Color	Pos. Leg Color	Jack/ Leg Color
			0.062"	0.125"	0.188"	0.25"			
			30 AWG	24 AWG	20 AWG	16 AWG			
J	32 to 529 530 to 1400	+/- 4 °F +/- 0.75%	600 °F	700 °F	800 °F	900 °F	Red	White	Black
K	32 to 559 560 to 2300	+/- 4 °F +/- 0.75%	1400 °F	1600 °F	1700 °F	1800 °F	Red	Yellow	Yellow
T	-300 to -90 -91 to 270 271 to 700	+/- 1.5% +/- 2 °F +/- 0.75%	300 °F	400 °F	500 °F	500 °F	Red	Blue	Blue
E	32 to 640 641 to 1500	+/- 4 °F +/-0.5%	700 °F	800 °F	900 °F	1000 °F	Red	Purple	Purple
N	32 to 560 561 to 2300	+/- 4 °F +/-0.75%	1600 °F	1700 °F	1700 °F	1700 °F	Red	Orange	Orange

RTDs

RTDs are specified through the following criteria:

- Construction (thin film or wire wound)
- RTD resistance (100Ω/Platinum most common)
- Wire configuration (3 wire most common)
- Sensor material (Pt, Cu or Ni)
- Accuracy (IEC751 standards are common)
- TCR value (0.00385Ω/ Ω/°C most common)

IEC751 standards specify the accuracy for 100Ω platinum RTDs with 0.00385Ω/ Ω/°C TCR as:

Class A: +/-0.15°C at 0°C, increasing linearly to +/-1.15°C at 500°C

Class B: +/-0.30°C at 0°C, increasing linearly to +/-2.8 °C at 500°C