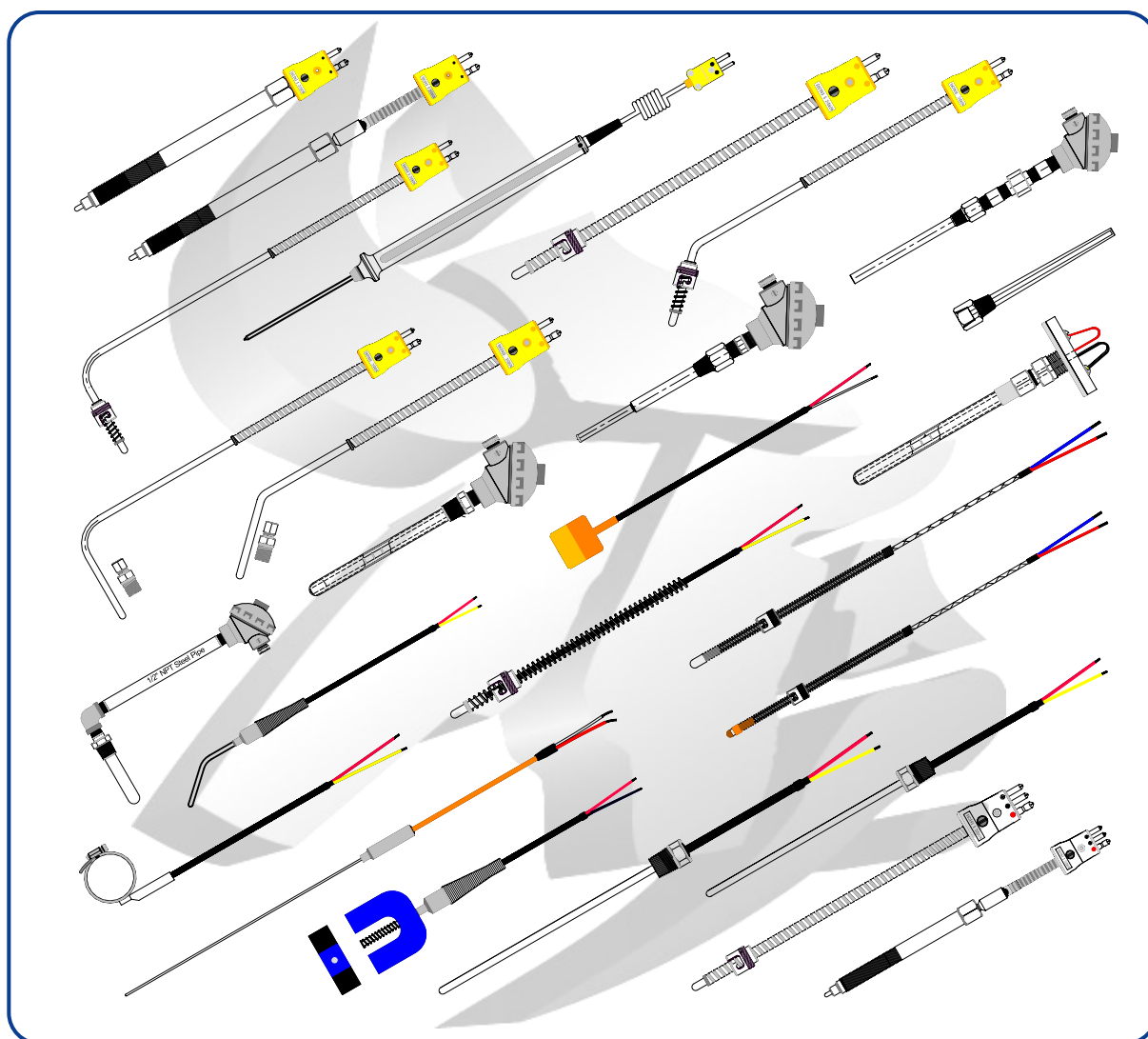




Base & Noble Metal Thermocouples for Industrial Applications



Nordic Sensors Industrial Inc.
6860 Louis-Sicard, Saint-Léonard, Québec, Canada H1P 1T7
Telephone: 1-888-667-3421 Fax: 1-888-867-9986
www.nordicsensors.com

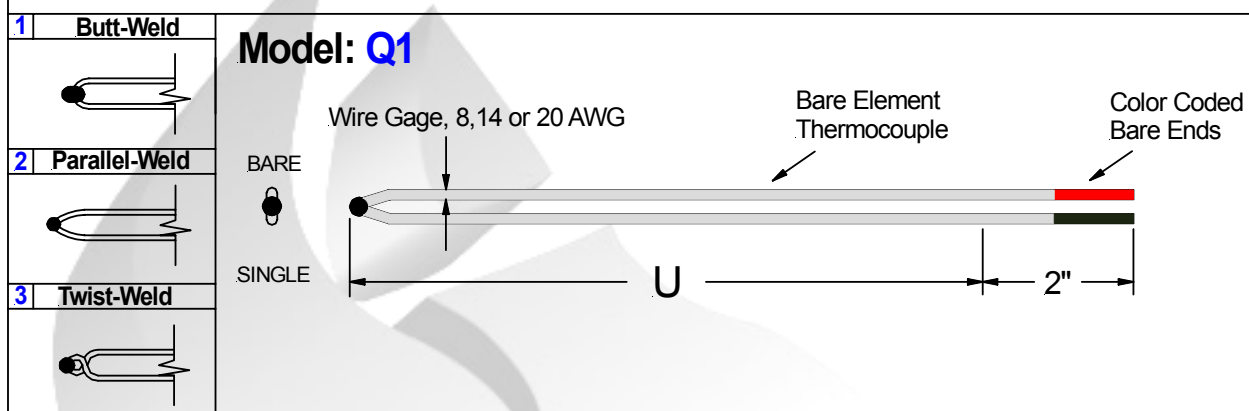
TABLE OF CONTENTS

BASE & NOBLE METAL THERMOCOUPLES FOR INDUSTRIAL APPLICATIONS

MODEL	DESCRIPTION	PAGE
Q1	BASE METAL - BARE ELEMENTS	79
Q2	BASE METAL - ELEMENTS C/W CERAMIC INSULATORS	80
Q3	BASE METAL - ANGLE ELEMENTS C/W CERAMIC INSULATORS	81
R1	BASE METAL - T/C ASSEMBLY C/W HEAD & PROTECTION TUBE	82
R2	BASE METAL - ANGLE T/C ASSEMBLY C/W HEAD & PROTECTION TUBE	83
R3	BASE METAL - T/C ASSEMBLY C/W HEAD & PROTECTION TUBE & FITTING	84
S1	BASE METAL - T/C ASSEMBLY C/W HEAD & CERAMIC PROTECTION TUBE	85
S2	BASE METAL - T/C ASSEMBLY C/W TERM. BLOCK & CERAMIC PRO. TUBE	86
T1	NOBLE METAL - BARE ELEMENTS	87
T2	NOBLE METAL - ELEMENTS C/W CERAMIC INSULATORS	88
T3	NOBLE METAL - T/C ASSEMBLY C/W HEAD & PROTECTION TUBE	89
T4	NOBLE METAL - T/C ASSEMBLY C/W HEAD & CERAMIC PRO. TUBE	90
T5	NOBLE METAL - T/C ASSEMBLY C/W TERM. BLOCK & CERAMIC PRO. TUBE	91

INDUSTRIAL THERMOCOUPLES

Base Metal Bare Thermocouple Elements



Steps: **A** **B** **C** **D**

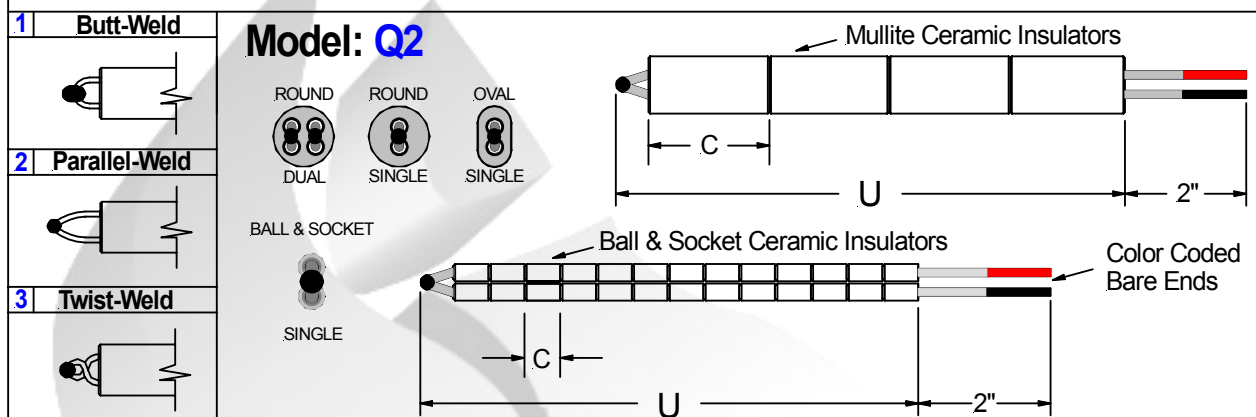
Model: **Q1** — — —

A	C	D													
Junction Weld Description	Calibration	"U" Dimension													
<table border="1" style="border-collapse: collapse; width: 100%;"> <tr> <td style="width: 20px; text-align: center;">A</td> <td>Butt-weld</td> </tr> <tr> <td style="text-align: center;">B</td> <td>Parallel-weld</td> </tr> <tr> <td style="text-align: center;">C</td> <td>Twist-weld</td> </tr> </table>	A	Butt-weld	B	Parallel-weld	C	Twist-weld	<table border="1" style="border-collapse: collapse; width: 100%;"> <tr> <td style="width: 20px; text-align: center;">Standard Limits of Error</td> <td style="width: 20px; text-align: center;">Special Limits of Error</td> </tr> <tr> <td style="text-align: center;">A</td> <td style="text-align: center;">J</td> </tr> <tr> <td style="text-align: center;">B</td> <td style="text-align: center;">K</td> </tr> </table>	Standard Limits of Error	Special Limits of Error	A	J	B	K	<table border="1" style="border-collapse: collapse; width: 100%;"> <tr> <td style="text-align: center;">Specify "U" Length In Inches <u>0</u> <u>1</u> <u>8</u></td> </tr> </table> Example "U" is 18" = 018	Specify "U" Length In Inches <u>0</u> <u>1</u> <u>8</u>
A	Butt-weld														
B	Parallel-weld														
C	Twist-weld														
Standard Limits of Error	Special Limits of Error														
A	J														
B	K														
Specify "U" Length In Inches <u>0</u> <u>1</u> <u>8</u>															

B	Thermocouple Wire Gage	
Model	Wire Gage	Description
1	8	No Ceramic Insulators, Bare Thermocouple Element
2	14	No Ceramic Insulators, Bare Thermocouple Element
3	20	No Ceramic Insulators, Bare Thermocouple Element

INDUSTRIAL THERMOCOUPLES

Base Metal Thermocouple Elements With Ceramic Insulators



Steps: A B C D

Model: **Q2**

A	Junction Weld Description
A	Butt-weld
B	Parallel-weld
C	Twist-weld

C	Calibration
Standard Limits of Error	Special Limits of Error
A J	C J
B K	D K

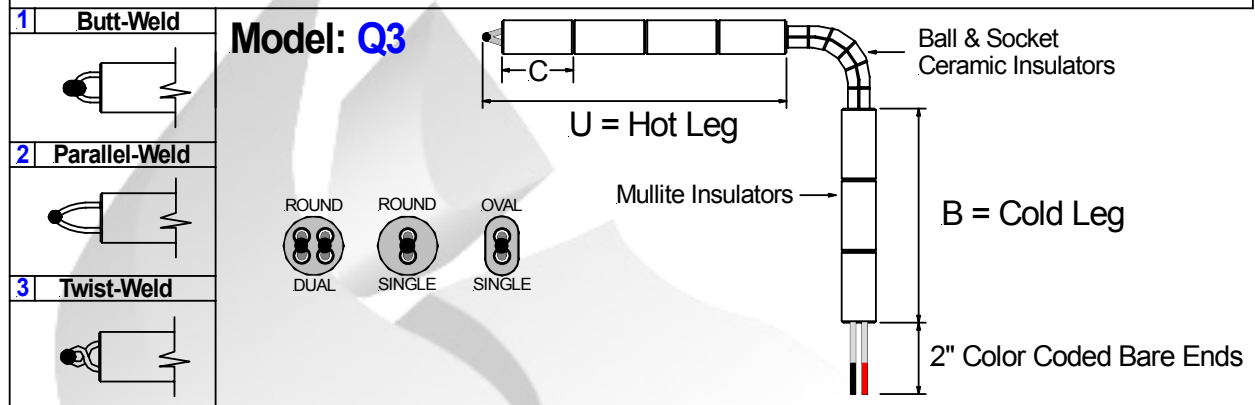
D	"U" Dimension
Specify "U" Length In Inches	0 1 8

Example "U" is 18" = 018

B Wire Gage & Ceramic Insulator Selection					
Model	Wire Gage	Shape	"C" Length	Outside Diameter	Elements
1	8	Round	1"	0.468"	Single
2	8	Round	3"	0.500"	Single
3	8	Oval	1"	0.435" x 0.250"	Single
4	8	Oval	3"	0.562" x 0.312"	Single
5	14	Round	1"	0.250"	Single
6	14	Round	3"	0.281"	Single
7	14	Round	1"	0.312"	Dual
8	14	Oval	1"	0.312" x 0.187"	Single
9	14	Oval	3"	0.375" x 0.217"	Single
10	20	Round	1"	0.187"	Single
11	20	Round	3"	0.225"	Single
12	8	Ball & Socket	0.260"	0.260"	Single
13	14	Ball & Socket	0.200"	0.200"	Single
14	20	Ball & Socket	0.170"	0.170"	Single

INDUSTRIAL THERMOCOUPLES

Base Metal Angle Thermocouple Elements With Ceramic Insulators



Steps: A B C D E

Model: **Q3**

A	Junction Weld Description
A	Butt-weld
B	Parallel-weld
C	Twist-weld

C	Calibration
	Standard Limits of Error
	Special Limits of Error
A	J
B	K
C	J
D	K

D	"U" Hot Dimension
	Specify "U" Length In Inches <u>1 2</u>
	Example "U" is 12" = 12

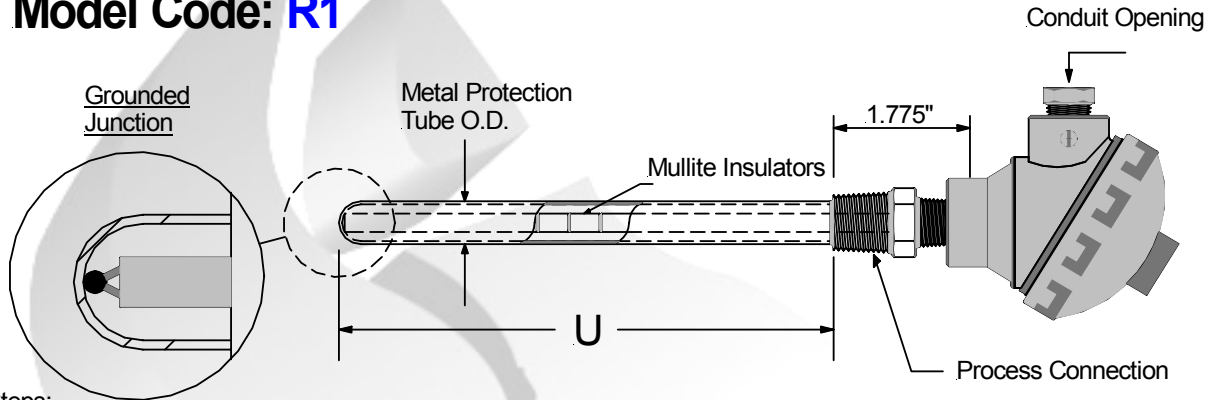
E	"B" Cold Dimension
	Specify "B" Length In Inches <u>1 8</u>
	Example "U" is 18" = 18

B Wire Gage & Ceramic Insulator Selection					
Model	Wire Gage	Shape	"C" Length	Outside Diameter	Elements
1	8	Round	1"	0.468"	Single
2	8	Round	3"	0.500"	Single
3	8	Oval	1"	0.435" x 0.250"	Single
4	8	Oval	3"	0.562" x 0.312"	Single
5	14	Round	1"	0.250"	Single
6	14	Round	3"	0.281"	Single
7	14	Round	1"	0.312"	Dual
8	14	Oval	1"	0.312" x 0.187"	Single
9	14	Oval	3"	0.375" x 0.217"	Single
10	20	Round	1"	0.187"	Single
11	20	Round	3"	0.225"	Single

INDUSTRIAL THERMOCOUPLES

Base Metal Thermocouple & Metal Protection Tube Assembly

Model Code: R1



Steps:

Model:

R1

A	Outside Diameter
1	1/4" NPT Pipe
2	1/2" NPT Pipe
3	3/4" NPT Pipe

B	Wall Thickness
1	Schedule 20
2	Schedule 40
3	Schedule 80

C	Sheath Material
A	Carbon Steel
B	304 SS
C	316 SS
D	Inconel 600
E	Ceramic Coated

D	"U" Dimension
	Specify "U" Length In Inches <u>0 0 6</u>

Example "U" is 6" = 006

E	Calibration
	Standard Limits of Error
A	J
B	K

F	Junction			
Wire Gage	Gounded		Ungounded	
	Single	Dual	Single	Dual
8	1	4	7	10
14	2	5	8	11
20	3	6	9	12

G	Process Connection
1	None
2	1/2" NPT
3	3/4" NPT
4	1" NPT

H	Connection Head Model
A	None, 3" Split Leads
B	Cast Aluminum: Standard
C	Cast Aluminum: Mini
D	Black Nylon Head
E	Cast Iron: Standard Size
F	316 Stainless Steel
G	Explosion Proof

I	Conduit Opening
1	None
2	1/2" NPT
3	3/4" NPT

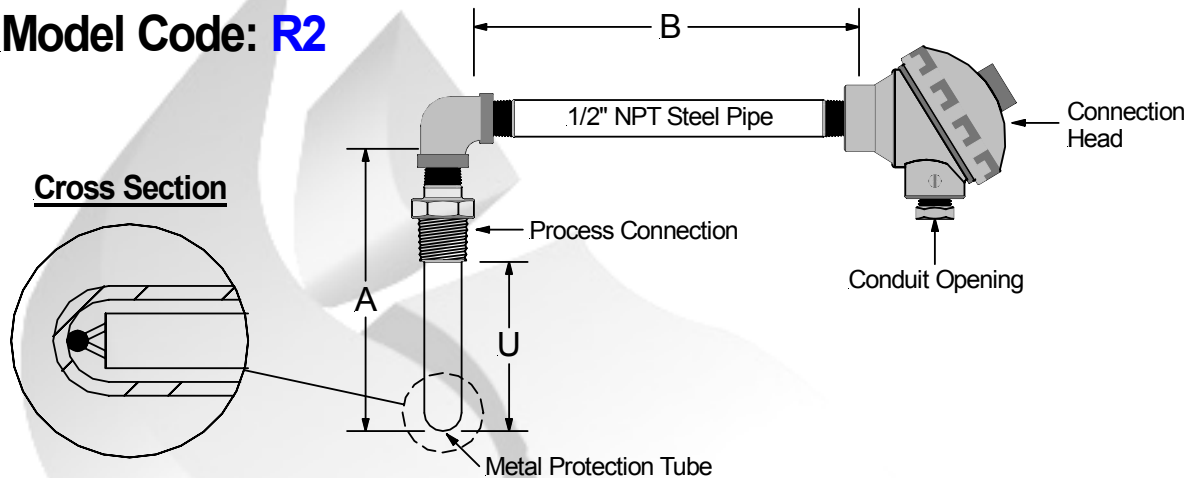
J	Connection Head Options
N	None
B	No Terminal Block
T	4-20mA Transmitter

Nordic Sensors Ind. Inc. Tel: 1-888-667-3421 & Fax: 1-888-867-9986.

INDUSTRIAL THERMOCOUPLES

Base Metal Angle Thermocouple & Metal Protection Tube Assembly

Model Code: **R2**



Steps: A B C D E F G H I J K L

Model: **R2**

A Protection Tube O.D.	
A	1/4" Pipe
B	1/2" Pipe
C	3/4" Pipe

B Wall Thickness	
1	Schedule 20
2	Schedule 40
3	Schedule 80

C Sheath Material	
A	Carbon Steel
B	304 SS
C	316 SS
D	Inconel 600
E	Ceramic Coated

D "A" Dimension	
Specify "A" Length In Inches 0 1 2	
Example "A" is 12" = 012	

E Calibration	
Standard Limits of Error	Special Limits of Error
A J	C J
B K	D K

F Junction				
Wire Gage	Gounded		Ungounded	
	Single	Dual	Single	Dual
8	1	4	7	10
14	2	5	8	11
20	3	6	9	12

G Process Connection	
A	None
B	1/2" NPT
C	3/4" NPT
D	1" NPT

H "U" Dimension	
Specify "U" Length In Inches 0 0 8	
Example "U" is 8" = 008	

I Connection Head Model	
A	None, 3" Split Leads
B	Cast Aluminum: Standard
C	Cast Aluminum: Mini
D	Black Nylon Head
E	Cast Iron: Standard Size
F	316 Stainless Steel
G	Explosion Proof

J Conduit Opening	
1	None
2	1/2" NPT
3	3/4" NPT

K Connection Head Options	
N	None
B	No Terminal Block
T	4-20mA Transmitter

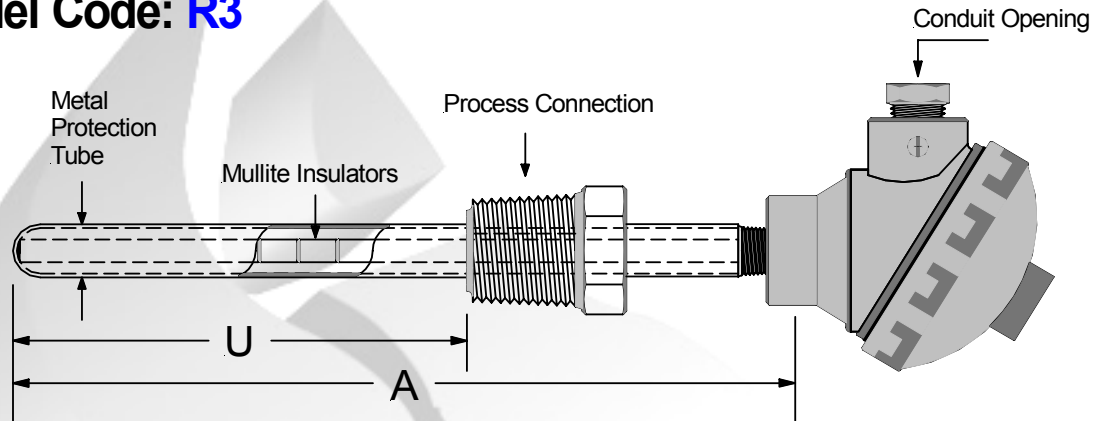
L "B" Insertion	
Specify "B" Length In Inches 0 1 8	
Example "B" is 18" = 018	

Nordic Sensors Ind. Inc. Tel: 1-888-667-3421 & Fax: 1-888-867-9986.

INDUSTRIAL THERMOCOUPLES

Base Metal Thermocouple & Metal Protection Tube Assembly

Model Code: **R3**



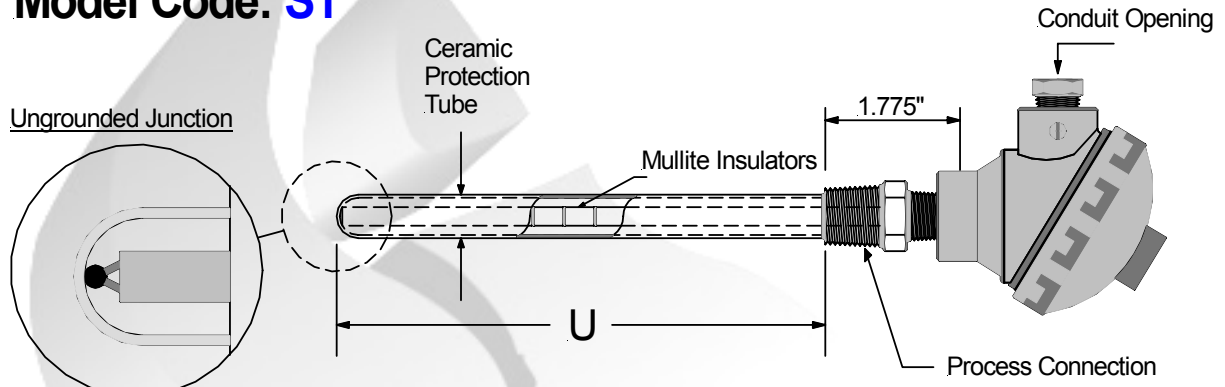
Steps:	A	B	C	D	E	F	G	H	I	J	K																								
Model:	R3																																		
A Protection Tube O.D.	<table border="1"> <tr><td>A</td><td>1/4" Pipe</td></tr> <tr><td>B</td><td>1/2" Pipe</td></tr> <tr><td>C</td><td>3/4" Pipe</td></tr> </table>	A	1/4" Pipe	B	1/2" Pipe	C	3/4" Pipe																												
A	1/4" Pipe																																		
B	1/2" Pipe																																		
C	3/4" Pipe																																		
B Wall Thickness	<table border="1"> <tr><td>1</td><td>Schedule 20</td></tr> <tr><td>2</td><td>Schedule 40</td></tr> <tr><td>3</td><td>Schedule 80</td></tr> </table>	1	Schedule 20	2	Schedule 40	3	Schedule 80																												
1	Schedule 20																																		
2	Schedule 40																																		
3	Schedule 80																																		
C Sheath Material	<table border="1"> <tr><td>A</td><td>Carbon Steel</td></tr> <tr><td>B</td><td>304 SS</td></tr> <tr><td>C</td><td>316 SS</td></tr> <tr><td>D</td><td>Inconel 600</td></tr> <tr><td>E</td><td>Ceramic Coated</td></tr> </table>	A	Carbon Steel	B	304 SS	C	316 SS	D	Inconel 600	E	Ceramic Coated																								
A	Carbon Steel																																		
B	304 SS																																		
C	316 SS																																		
D	Inconel 600																																		
E	Ceramic Coated																																		
D "A" Dimension	<table border="1"> <tr><td colspan="2">Specify "A" Length In Inches <u>0 1 2</u></td></tr> <tr><td colspan="2">Example "A" is 12" = 012</td></tr> </table>	Specify "A" Length In Inches <u>0 1 2</u>		Example "A" is 12" = 012																															
Specify "A" Length In Inches <u>0 1 2</u>																																			
Example "A" is 12" = 012																																			
E Calibration	<table border="1"> <tr> <th>Standard Limits of Error</th> <th>Special Limits of Error</th> </tr> <tr> <td>A J</td> <td>C J</td> </tr> <tr> <td>B K</td> <td>D K</td> </tr> </table>	Standard Limits of Error	Special Limits of Error	A J	C J	B K	D K																												
Standard Limits of Error	Special Limits of Error																																		
A J	C J																																		
B K	D K																																		
F Junction	<table border="1"> <tr> <th rowspan="2">Wire Gage</th> <th colspan="2">Gounded</th> <th colspan="2">Ungounded</th> </tr> <tr> <th>Single</th> <th>Dual</th> <th>Single</th> <th>Dual</th> </tr> <tr> <td>8</td> <td>1</td> <td>4</td> <td>7</td> <td>10</td> </tr> <tr> <td>14</td> <td>2</td> <td>5</td> <td>8</td> <td>11</td> </tr> <tr> <td>20</td> <td>3</td> <td>6</td> <td>9</td> <td>12</td> </tr> </table>	Wire Gage	Gounded		Ungounded		Single	Dual	Single	Dual	8	1	4	7	10	14	2	5	8	11	20	3	6	9	12										
Wire Gage	Gounded		Ungounded																																
	Single	Dual	Single	Dual																															
8	1	4	7	10																															
14	2	5	8	11																															
20	3	6	9	12																															
G Process Connection	<table border="1"> <tr><td>A</td><td>1/2" NPT Hex Bushing</td></tr> <tr><td>B</td><td>3/4" NPT Hex Bushing</td></tr> <tr><td>C</td><td>1" NPT Hex Bushing</td></tr> </table>	A	1/2" NPT Hex Bushing	B	3/4" NPT Hex Bushing	C	1" NPT Hex Bushing																												
A	1/2" NPT Hex Bushing																																		
B	3/4" NPT Hex Bushing																																		
C	1" NPT Hex Bushing																																		
H "U" Dimension	<table border="1"> <tr><td colspan="2">Specify "U" Length In Inches <u>0 0 8</u></td></tr> <tr><td colspan="2">Example "U" is 8" = 008</td></tr> </table>	Specify "U" Length In Inches <u>0 0 8</u>		Example "U" is 8" = 008																															
Specify "U" Length In Inches <u>0 0 8</u>																																			
Example "U" is 8" = 008																																			
I Connection Head Model	<table border="1"> <tr><td>A</td><td>None , 3" Split Leads</td></tr> <tr><td>B</td><td>Cast Aluminum: Standard</td></tr> <tr><td>C</td><td>Cast Aluminum: Mini</td></tr> <tr><td>D</td><td>Black Nylon Head</td></tr> <tr><td>E</td><td>Cast Iron: Standard Size</td></tr> <tr><td>F</td><td>316 Stainless Steel</td></tr> <tr><td>G</td><td>Explosion Proof</td></tr> </table>	A	None , 3" Split Leads	B	Cast Aluminum: Standard	C	Cast Aluminum: Mini	D	Black Nylon Head	E	Cast Iron: Standard Size	F	316 Stainless Steel	G	Explosion Proof																				
A	None , 3" Split Leads																																		
B	Cast Aluminum: Standard																																		
C	Cast Aluminum: Mini																																		
D	Black Nylon Head																																		
E	Cast Iron: Standard Size																																		
F	316 Stainless Steel																																		
G	Explosion Proof																																		
J Conduit Opening	<table border="1"> <tr><td>1</td><td>None</td></tr> <tr><td>2</td><td>1/2" NPT</td></tr> <tr><td>3</td><td>3/4" NPT</td></tr> </table>	1	None	2	1/2" NPT	3	3/4" NPT																												
1	None																																		
2	1/2" NPT																																		
3	3/4" NPT																																		
K Connection Head Options	<table border="1"> <tr><td>N</td><td>None</td></tr> <tr><td>B</td><td>No Terminal Block</td></tr> <tr><td>T</td><td>4-20mA Transmitter</td></tr> </table>	N	None	B	No Terminal Block	T	4-20mA Transmitter																												
N	None																																		
B	No Terminal Block																																		
T	4-20mA Transmitter																																		

Nordic Sensors Ind. Inc. Tel: 1-888-667-3421 & Fax: 1-888-867-9986.

INDUSTRIAL THERMOCOUPLES

Base Metal Thermocouple & Ceramic Protection Tube Assembly

Model Code: S1



Model:

S1

A Ceramic Tube Size	
A	1/4" O.D.
B	3/8" O.D.
C	1/2" O.D.
D	11/16" O.D.
E	1" O.D.

B Protection Tube	
1	Alumina 1800C Max.
2	Mullite 1600C Max.

C "U" Dimension	
Specify "U" Length In Inches <u>06</u>	

Example "U" is 6" = 06

D Calibration			
Standard Limits of Error		Special Limits of Error	
A	J	C	J
B	K	D	K

E Wire Size		
Gage	Single	Dual
8	1	4
14	2	5
20	3	6

F Process Connection	
1	None
2	1/2" NPT
3	3/4" NPT
4	1" NPT

G Connection Head Model	
A	None, 3" Split Leads
B	Cast Aluminum: Standard
C	Cast Aluminum: Mini
D	Black Nylon Head
E	Cast Iron: Standard Size
F	316 Stainless Steel
G	Explosion Proof

H Conduit Opening	
1	None
2	1/2" NPT
3	3/4" NPT

I Connection Head Options	
N	None
B	No Terminal Block
T	4-20mA Transmitter

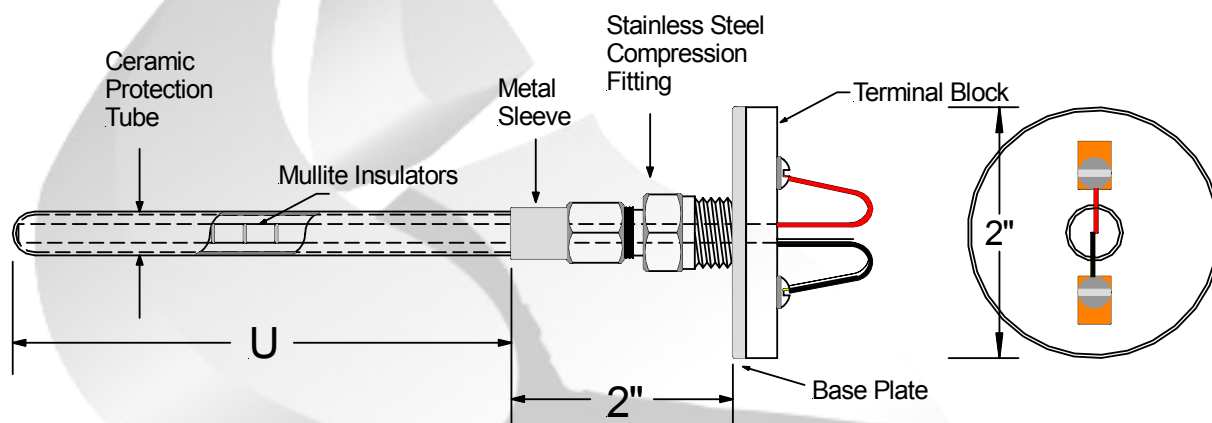
Nordic Sensors Ind. Inc. Tel: 1-888-667-3421 & Fax: 1-888-867-9986.

INDUSTRIAL THERMOCOUPLES

Base Metal Thermocouple, Ceramic Protection Tube & Terminal Block Assembly

Model Code: **S2**

Operating Temperature:
+1000 C Max.



Model: **S2** — —

A	Ceramic Tube Size
A	1/4" O.D.
B	3/8" O.D.

B	Protection Tube
1	Alumina 1800C Max.
2	Mullite 1600C Max.

C	"U" Dimension
Specify "U" Length In Inches <u>06</u>	

Example "U" is 6" = 06

D	Calibration			
Standard Limits of Error		Special Limits of Error		
A	J	C	J	
B	K	D	K	

E	Wire Size	
Gage	Single	Dual
20	<u>1</u>	<u>4</u>
24	<u>2</u>	<u>5</u>

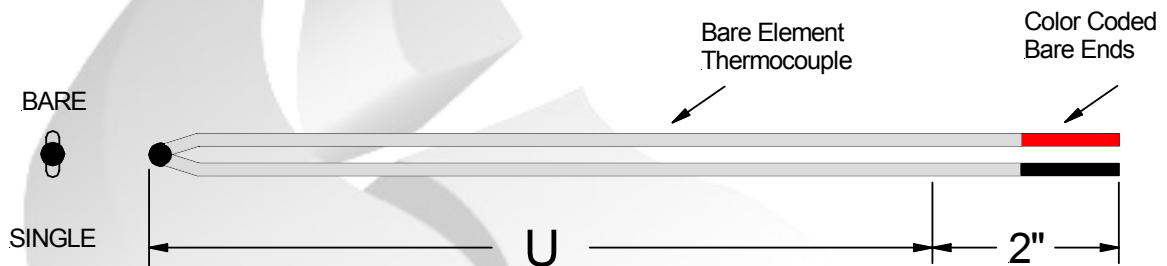
F	Terminal Block Description
A	Ceramic
B	Ceramic, Spring Loaded
C	Plastic, 1" Dia. Micro Head Size

Nordic Sensors Ind. Inc. Tel: 1-888-667-3421 & Fax: 1-888-867-9986.

NOBEL METAL THERMOCOUPLES

Bare Element Thermocouples

Model: **T1**



Steps: **A** **B** **C**

Model: **T1**

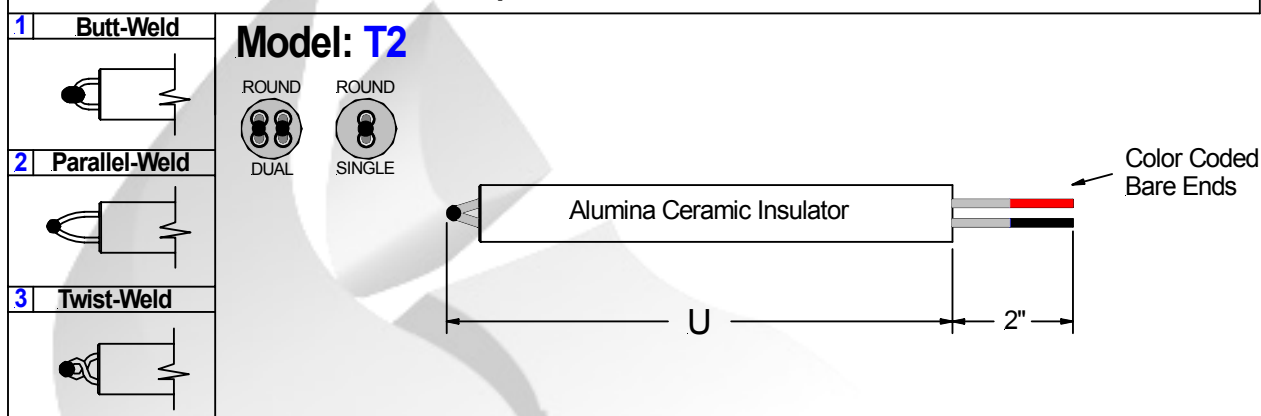
A	Wire Gage
A	20 Gage
B	24 Gage
C	26 Gage
D	28 Gage

B Calibration			
Standard Limits of Error		Special Limits of Error	
A	S	D	S
B	R	E	R
C	B	F	B

C	"U" Dimension
Specify "U" Length In Inches <u>0 1 8</u>	
Example "U" is 18" = 018	

NOBEL METAL THERMOCOUPLES

Nobel Metal Thermocouple Elements With Ceramic Insulators



Steps: A — B — C — D

Model: **T2**

A Wire Size		
Gage	Single	Dual
20	1	5
24	2	6
26	3	7
28	4	8

B Insulator Diameter	
A	1/8" O.D.
B	3/16" O.D.
C	1/4" O.D.

C Calibration	
Standard Limits of Error	Special Limits of Error
A S	D S
B R	E R
C B	F B

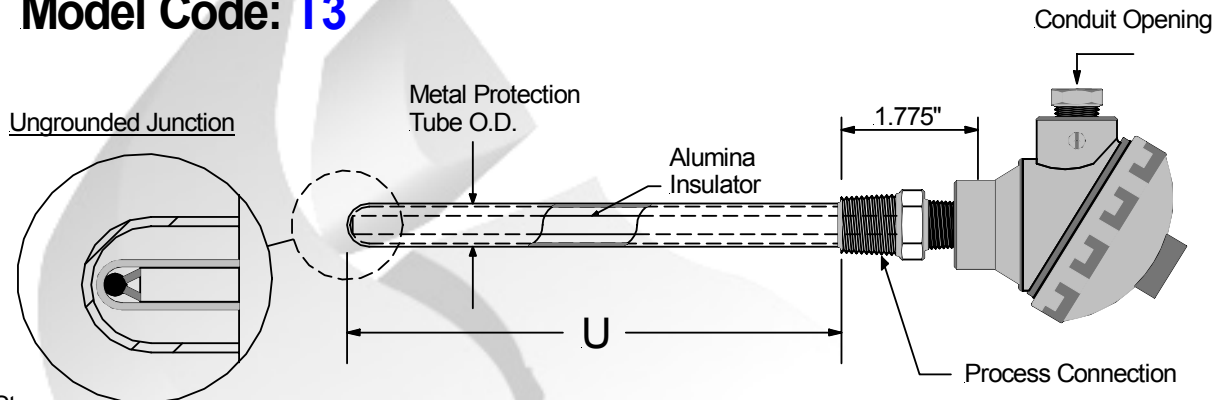
D "U" Dimension
Specify "U" Length In Inches <u>0 1 8</u>

Example "U" is 18" = 018

NOBEL METAL THERMOCOUPLES

Nobel Metal Thermocouple & Metal Protection Tube Assembly

Model Code: T3



Steps:

Model:

T3

A	Outside Diameter
1	1/4" NPT Pipe
2	1/2" NPT Pipe
3	3/4" NPT Pipe

B	Wall Thickness
1	Schedule 20
2	Schedule 40
3	Schedule 80

C	Sheath Material
A	Carbon Steel
B	304 SS
C	316 SS
D	Inconel 600
E	Ceramic Coated

D	"U" Dimension
	Specify "U" Length In Inches <u>06</u>

Example "U" is 6" = 06

E	Calibration
	Standard Limits of Error
A	S
B	R
C	B

F	Wire Size	
Gage	Single	Dual
20	1	5
24	2	6
26	3	7
28	4	8

G	Process Connection
1	None
2	1/2" NPT
3	3/4" NPT
4	1" NPT

H	Connection Head Model
A	None, 3" Split Leads
B	Cast Aluminum: Standard
C	Cast Aluminum: Mini
D	Black Nylon Head
E	Cast Iron: Standard Size
F	316 Stainless Steel
G	Explosion Proof

I	Conduit Opening
1	None
2	1/2" NPT
3	3/4" NPT

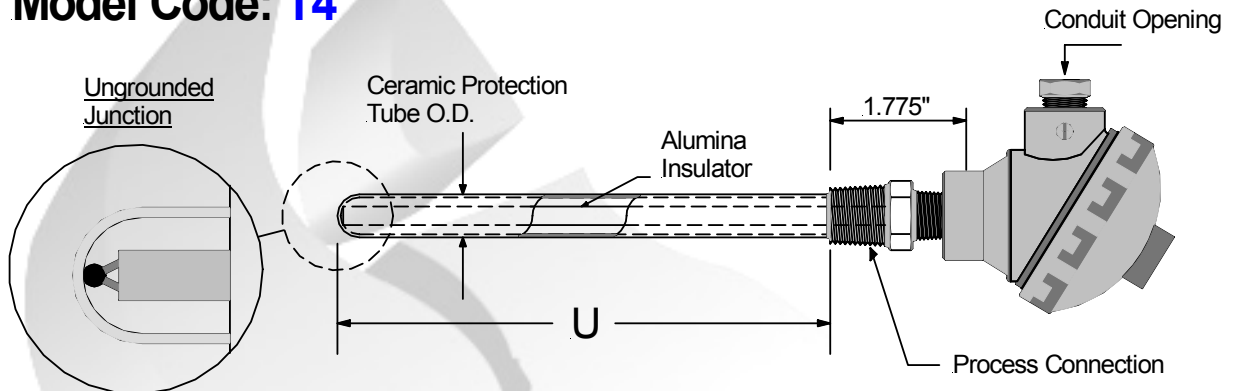
J	Connection Head Options
N	None
B	No Terminal Block
T	4-20mA Transmitter

Nordic Sensors Ind. Inc. Tel: 1-888-667-3421 & Fax: 1-888-867-9986.

NOBEL METAL THERMOCOUPLES

Nobel Metal Thermocouple & Ceramic Protection Tube Assembly

Model Code: **T4**



Model: **T4** A B C D E F G H I

A Ceramic Tube Size	
A	1/4" O.D.
B	3/8" O.D.
C	1/2" O.D.
D	11/16" O.D.
E	1" O.D.

B Protection Tube	
1	Alumina 1800C Max.
2	Mullite 1600C Max.

C "U" Dimension	
Specify "U" Length In Inches <u>06</u>	
Example "U" is 6" = 06	

D Calibration	
Standard Limits of Error	Special Limits of Error
A S	D S
B R	E R
C B	F B

E Wire Size		
Gage	Single	Dual
20	1	5
24	2	6
26	3	7
28	4	8

F Process Connection	
1	None
2	1/2" NPT
3	3/4" NPT
4	1" NPT

G Connection Head Model	
A	None, 3" Split Leads
B	Cast Aluminum: Standard
C	Cast Aluminum: Mini
D	Black Nylon Head
E	Cast Iron: Standard Size
F	316 Stainless Steel
G	Explosion Proof

H Conduit Opening	
1	None
2	1/2" NPT
3	3/4" NPT

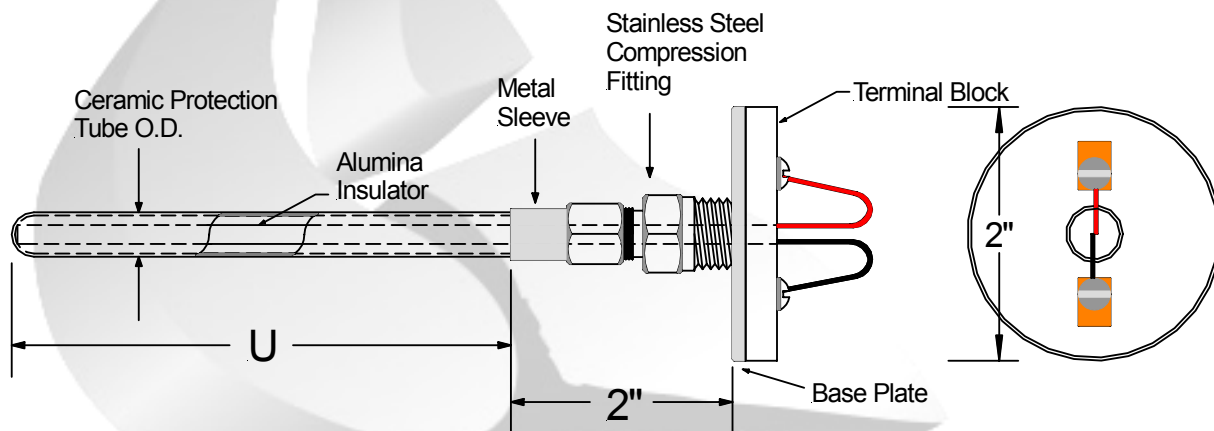
I Connection Head Options	
N	None
B	No Terminal Block
T	4-20mA Transmitter

NOBEL METAL THERMOCOUPLES

Nobel Metal Thermocouple, Ceramic Protection Tube & Terminal Block Assembly

Model Code: **T5**

Operating Temperature:
+1000 C Max.



Model:

T5

A	Ceramic Tube Size
1	1/4" O.D.
2	3/8" O.D.

B	Protection Tube
A	Alumina 1800C Max.
B	Mullite 1600C Max.

C	"U" Dimension
	Specify "U" Length In Inches <u>0 6</u>

Example "U" is 6" = 06

D	Calibration
	Standard Limits of Error
A	S
B	R
C	B

E	Wire Size
	Gage
	Single
	Dual
20	1
24	2
26	3
28	4

F	Terminal Block Description
A	Ceramic
B	Ceramic, Spring Loaded
C	Plastic, 1" Dia. Micro Head Size

Nordic Sensors Ind. Inc. Tel: 1-888-667-3421 & Fax: 1-888-867-9986.