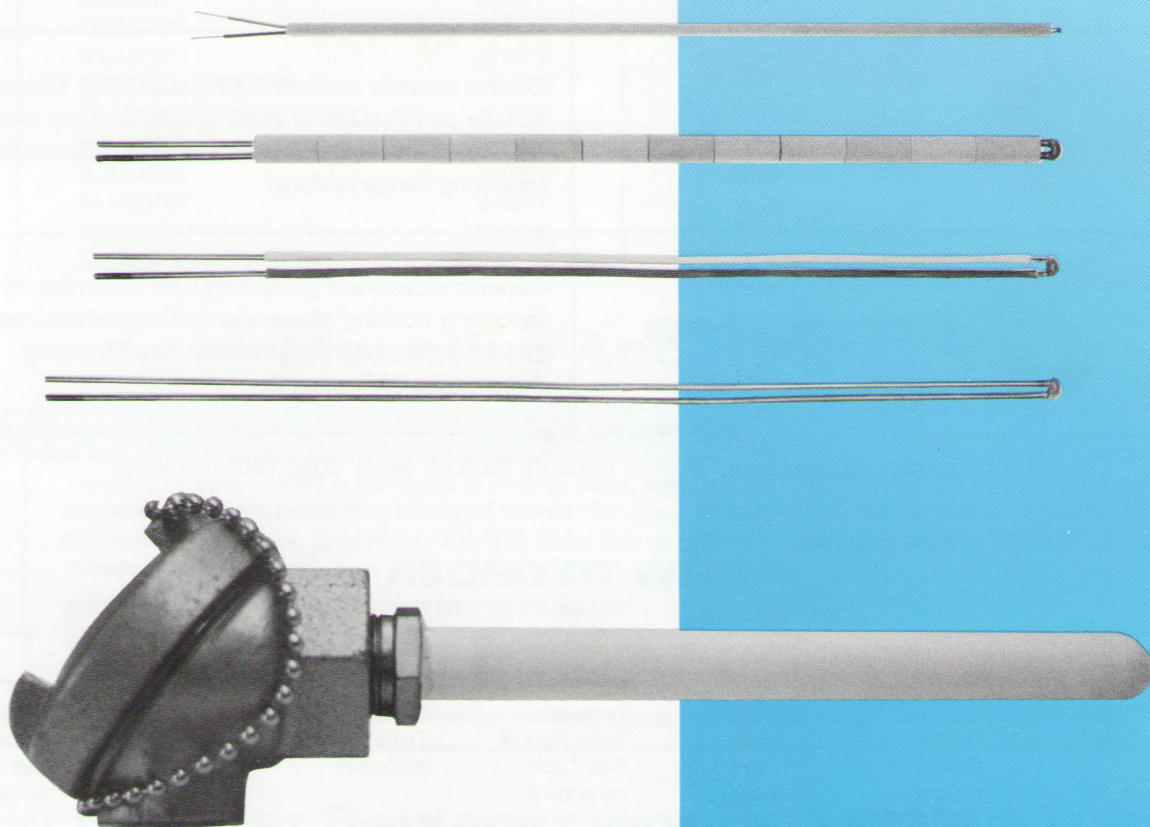
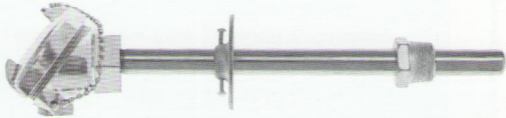
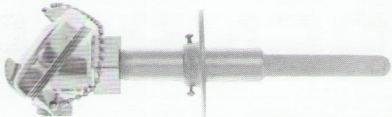
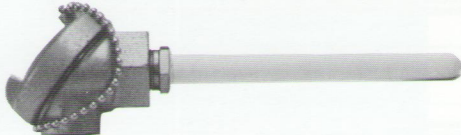




INDUSTRIAL TEMPERATURE SENSORS AND ASSEMBLIES



Standard Closed-End Protection Tube Thermocouples

MODEL		DESCRIPTION
M		Straight closed-end metal protection tube assembly. General purpose aluminum screw cover head and ceramic terminal block standard. Optional adjustable mounting flange or welded threaded mounting bushing.
L		Angle type closed-end metal protection tube assembly with general purpose screw cover head and ceramic terminal block. Cold leg cast iron pipe, same OD as selected hot leg. Options include adjustable mounting flange.
C		Ceramic closed-end protection tube assembly. Standard assembly supplied with 4 inch sleeve and adjustable flange. Standard aluminum head and ceramic terminal block.
S		Closed-end silicon carbide protection tube assembly. Supplied with or without 3 inch dia. collar. Please specify. Standard OD of tube is 1 3/4 in. Adjustable mounting flange optional.
PCC		Double ceramic protection tube assembly. When ordering, specify part number of outer protection tube only. Inner tube will be supplied one size smaller. Adjustable mounting flange optional.
PCG		Ceramic closed-end protection tube assembly. A fixed mounting bushing allows standard aluminum head to be mounted. No mounting threads. See Mounting Accessories "A", page 2.

Other assemblies available. Please consult factory with your requirements.

HOW TO ORDER

	-		-		-		-		-			
ISA Type J, K, T, N*, E R, S, B, W*, W3*, W5*, Platinel II *Not ANSI symbols		Wire Gauge Base Metals <u>20, 14, 8</u> Precious Metals .010 dia. .020 dia. .032 dia.		Model Type (from above)		Protection Tube Part # See Table on page 2		Protection Tube Length in inches		Cold Leg Length Model L only		Mounting Accessories See Table on page 2

*When ordering precious metal thermocouples, only alumina protection tubes will be supplied.

Protection Tubes

Metal					
PART NO.		MATERIAL	MAX. TEMP.	SIZE	MAX. SIZE WIRE GAUGE
5		CAST IRON	1300°F	15/16" x 1-11/16"	8
5W		CAST IRON LONG LIFE	1300°F	15/16" x 1-11/16"	8
6		CARBON STEEL	1200°F	1/8" IPS	14
7		CARBON STEEL	1200°F	1/4" IPS	14
2		CARBON STEEL	1200°F	1/2" IPS	14
8		CARBON STEEL	1200°F	1" IPS	8
9		SS 304	1650°F	1/8" IPS	20
10		SS 304	1650°F	1/4" IPS	14
11		SS 304	1650°F	1/2" IPS	14
30		SS 304	1650°F	3/4" IPS	8
31		SS 304	1650°F	1" IPS	8
26		SS 304 TUBING	1650°F	1/16" OD	30
27		SS 304 TUBING	1650°F	1/8" OD	24
28		SS 304 TUBING	1650°F	3/16" OD	20
42		SS 304 TUBING	1650°F	1/4" OD	20
13		INCONEL 600	2100°F	1/2" IPS	14
14		INCONEL 600	2100°F	3/4" IPS	8
17		446 SS	2000°F	1/2" IPS	14
18		446 SS	2000°F	3/4" IPS	8
Ceramic					
20		MULITE*	3200°F	1/4" 3/8"	20
21		MULITE*	3200°F	7/16" 11/16"	14
22		MULITE*	3200°F	3/4" 1"	8
23		SILICON CARBIDE*	3000°F	1" 1-3/4"	8
24		SILICON CARBIDE W/COLLAR*	3000°F	1" 1-3/4"	8
49		ALUMINA*	3400°F	1/4" 3/8"	24
50		ALUMINA*	3400°F	5/16" 7/16"	20
51		ALUMINA*	3400°F	7/16" 11/16"	14
52		ALUMINA*	3400°F	3/4" 1"	8
64		HEXOLOGY	C/F	CONSULT FACTORY	C/F

Mounting Accessories

PART NO.	DESCRIPTION
A	Threaded bushing welded or cemented to ceramic tubes, sizes 1/2, 3/4, 1, 1-1/4 NPT. Specify size and distance from closed end of tube in inches from bottom of threads ("U" dim.). Threads toward hot end. Carbon steel material standard. Stainless steel available. Specify, i.e., A½-U10. Note: O.D. of protection tube cannot exceed minimum effective threads. (Consult factory.)
B	Adjustable mounting flange. (Correct size will be supplied.)
C	Adjustable mounting flange and sleeve (ceramic tubes only).
D	Mounting sleeve only 4" std. (ceramic tubes only).
G*	Adapter Bushing fixed at cold end to attach to thermocouple head threads toward cold end 1/2 NPT std.

How to Order Replacement Protection Tubes

P/T — — —

Part No.
(from above)

 Length
in inches

 Mounting
Accessories
(from above)

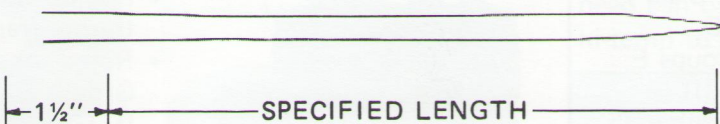
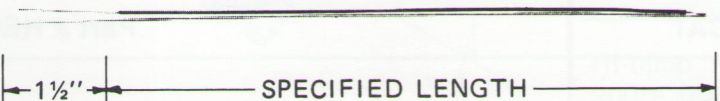
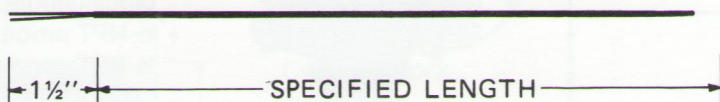
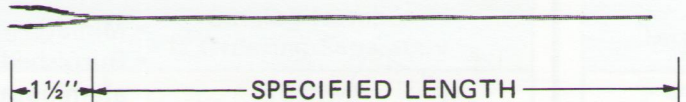
Base Metal Replacement Elements

MODEL		DESCRIPTION
A		Bare wire elements. Specify active length in inches. An additional 2½ inches will be supplied, negative leg color-coded as a standard.
B		Replacement elements with fiberglass insulation. Color-coded negative leg and 2½ additional inches are standard.
D		Elements with round double-bore insulators. For duplex (4 wire) elements, please specify "Duplex" at end of part no.
F	 Always specify length of hot and cold legs. Manufacturing allowance will always be made for bend and terminal connection.	Replacement elements for angle type thermocouple assemblies. Four inches of fish spine insulators will be provided for bend, 2-hole insulators for hot and cold legs. Please specify hot and cold length in inches.
G		One-piece ceramic insulator. 2½ inches bare wire, color-coded negative cold end. 20 and 14 gauge only.

HOW TO ORDER

	-		-		-		-	
ISA Type J, K, T, E, N* *Not ANSI symbol		Wire Gauge Base Metals 20, 14, 8		Model Type (from above)		Active Length in inches		Cold Leg Length in inches for Model "F" only

Precious Metal Replacement Elements

MODEL		DESCRIPTION
AP		Bare wire elements. Specify active length in inches. Additional 1 1/2 inches with negative leg color-coded standard.
BP		"S" Glass* sleeved elements. Additional 1 1/2 inches with color-coded negative leg standard. * Rated at 3000°F.
DP		Elements with round one-piece alumina insulator. Color-coded negative leg and additional 1 1/2 inches standard.
EP		Elements with round 2-hole one-piece alumina insulators, 1 in. fish spine and copper sleeve for easy replacement in ceramic terminal block.

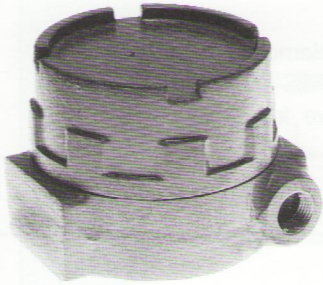
NOTE: For duplex (4 wire) replacement elements specify "Duplex" after model number.

HOW TO ORDER

	-		-		-		-	
ISA Type R, S, B, W*, W3*, W5*, P* *Not ANSI symbols		Wire Dia. .010 .020 .032		Model Type (from above)		Active Length in inches		Special Instructions

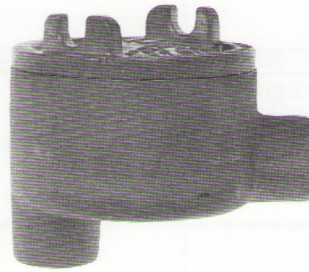
FOR FINE WIRE BASE METAL OR PRECIOUS METAL THERMOCOUPLES, SEE OUR COMPLETE WIRE CATALOG.

Thermocouple Screw Cover Heads



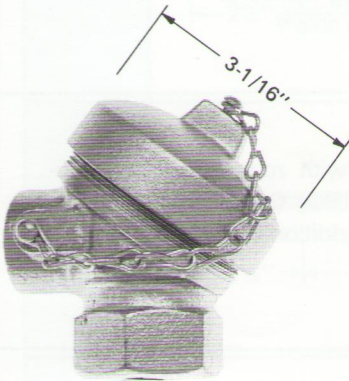
- Explosion-proof
- Cast aluminum body & cap
- Rated for: Class I, Groups C, D, Class II, Groups E, F, G, Class III
- 1/2 NPT process with 1/2 NPT conduit is standard
- For use with 2-wire transmitter

Part # HECAT



- Explosion-proof
- Cast aluminum body & cap
- For use with 2-wire transmitter
- Rated for Class I, Groups C, D, Class II, Groups E, F, G, Class III
- 1/2 NPT process with 1/2 NPT conduit is standard

Part # HECA



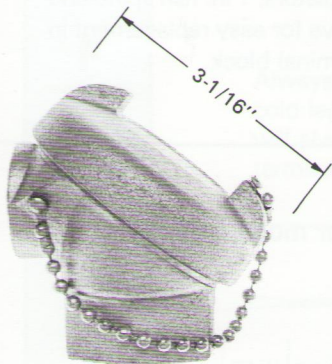
- Universal head
- Cast iron
- Heavy duty
- 1/2 NPT process with 3/4 NPT conduit is standard

Part # HUCI



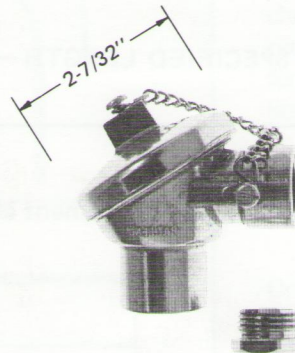
- Screw cover PVC head
- Impervious to most corrosive media
- Rated to 220°F
- Supplied with terminal block (single or duplex)
- 1/2 NPT process with 1/2 NPT conduit

**Part # HUPVC-1 (single)
Part # HUPVC-2 (duplex)**



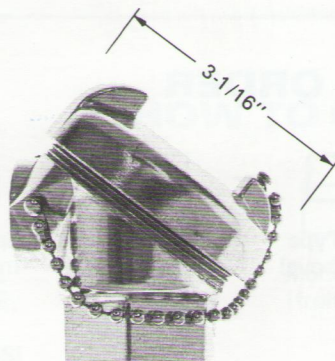
- Cast iron
- Heavy duty
- For use where larger universal head is not required
- 1/2 NPT process with 3/4 NPT conduit is standard

Part # HSCI



- Miniature head
- Burnished die cast aluminum
- 1/2 NPT process with compression fitting adapter & rubber ferrule

Part # HMCA

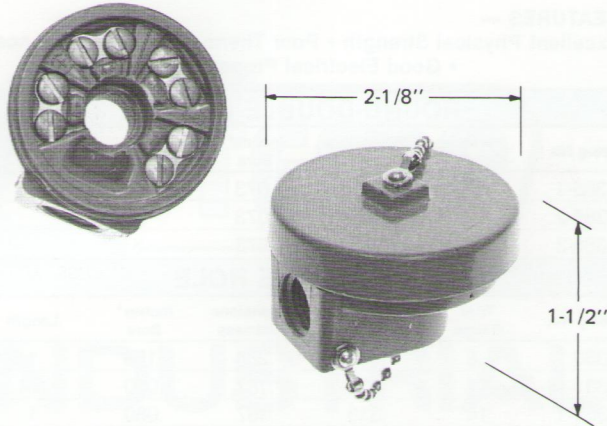


- Die cast aluminum
- Slightly smaller than type HUCA
- 1/2 NPT process with 3/4 NPT conduit is standard

**STANDARD FOR ALL
ASSEMBLIES ON PAGE 1**

Part # HSCA

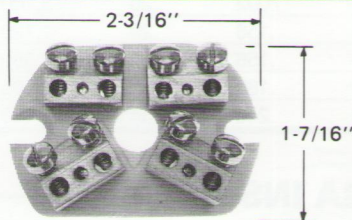
Miniature Waterproof Head



Miniature waterproof head is designed for termination of up to four wires for either thermocouples or RTD's. Accepts wire from 32 awg to 14 awg. The head is molded of reinforced thermoset compound. Standard head can be used in ambient temperatures to 350°F, hi-temp to 800°F.

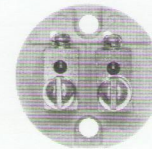
Description	Probe Mount Thread	Catalog Number If Ordering Separately
Standard 350°F (177°C)	1/4 NPT 3/8 NPT	HMWS-1 HMWS-2
Hi-temp 800°F (427°C)	1/4 NPT 3/8 NPT	HMWH-3 HMWH-4

Terminal Blocks For Connection Heads



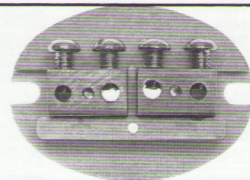
Ceramic block with brass terminals for head types **HUCI**

Terminals	Catalog Number If Ordering Separately
2 = single	TBUH-2
4 = duplex	TBUH-4
6 = triplex	TBUH-6



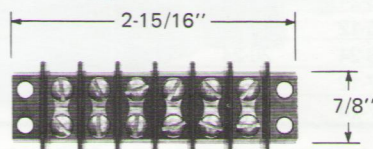
Ceramic block with nickel-plated brass terminals for head type **HMCA**

Terminals	Catalog Number If Ordering Separately
2 = single	TBMH-2
4 = duplex	TBMH-4



Ceramic block with brass terminals for head types **HSCI** and **HSCA**

Terminals	Catalog Number If Ordering Separately
2 = single	TBSH-2
4 = duplex	TBSH-4



Compensating terminal lugs are also available, ISA types J, K, T, E, R, S.

DOUBLE ROW TERMINAL BLOCKS FOR USE WITH HEAD TYPE HECAT AND HECA

Terminals	Catalog Number If Ordering Separately
2 = single	C220-2
4 = duplex	C220-4
6 = triplex	C220-6
8 = fourplex	C200-8

Thermocouple Insulators

MULLITE INSULATORS

Maximum Continuous Temperature 2642°F (1450°C)
Maximum Intermittent Temperature 3000°F (1650°C)

— FEATURES —

- High Temperature • Low Thermal Expansion
- Good Mechanical Strength

ROUND-SINGLE HOLE

Catalog No.	Wire Gauge	Dimensions Dia.	Inches* Bore	Length
CM314	12-14	.125	.093	12
CM315	22-24	.062	.031	12

ROUND-DOUBLE HOLE

CM376-1	18-20	.156	.046	1
CM376-3	18-20	.156	.046	3
CM377-12	16-18	.250	.062	12
CM333-1	22-24	.125	.031	1
CM333-2	22-24	.125	.031	2
CM333-12	22-24	.125	.031	12
CM333-18	22-24	.125	.031	18
CM333-24	22-24	.125	.031	24

ROUND-FOUR HOLE

CM360	14	.312	.091	1
CM378	18	.187	.046	1
CM350	8	.472	.157	1

OVAL-DOUBLE HOLE

Catalog No.	Wire Gauge	Width	Dimensions Thickness	Inches* Bore	Length
CM372-1	8	.468	.281	.156	1
CM372-3	8	.468	.281	.156	3
CM373-1	14	.375	.218	.093	1

CORDIERITE INSULATORS

Maximum Continuous Temperature 2282°F (1250°C)
Maximum Intermittent Temperature 2372°F (1300°C)

— FEATURES —

- Excellent Thermal Shock Resistance • Fair Physical Strength
- Fair Electrical Properties

ROUND-DOUBLE HOLE

Catalog No.	Wire Gauge	Dimensions Dia.	Inches* Bore	Length
CC321	6	.505	.188	1
CC327-1	8	.465	.171	1
CC327-3	8	.465	.171	3
CC320-1	8	.385	.145	1
CC320-3	8	.385	.145	3
CC323-1	14	.250	.081	1
CC323-3	14	.250	.081	3
CC324	18-20	.156	.046	1 1/2

OVAL-DOUBLE HOLE

Catalog No.	Wire Gauge	Width	Dimensions Thickness	Inches* Bore	Length
CC300	4	.718	.412	.218	1
CC301-3/8	6	.531	.281	.170	3/8
CC301-1	6	.531	.281	.170	1
CC301-3	6	.531	.281	.170	3
CC303-1/2	8	.437	.250	.156	1/2
CC303-1	8	.437	.250	.156	1
CC303-3	8	.437	.250	.156	3
CC309-1/2	14	.312	.187	.080	1/2
CC309-1	14	.312	.187	.080	1
CC309-3	14	.312	.187	.080	3

STEATITE INSULATORS

Maximum Continuous Temperature 1832°F (1000°C)
Maximum Intermittent Temperature 2372°F (1300°C)

FEATURES —

- Excellent Physical Strength • Poor Thermal Shock Resistance
- Good Electrical Properties

ROUND-DOUBLE HOLE

Catalog No.	Wire Gauge	Dimensions Dia.	Inches* Bore	Length
CS385-1	14	.245	.073	1
CS385-2	14	.245	.073	2
CS385-3	14	.245	.073	3

OVAL-DOUBLE HOLE

Catalog No.	Wire Gauge	Width	Dimensions Thickness	Inches* Bore	Length
CS380	8	.500	.284	.156	1
CS381-1/4	14	.313	.187	.080	1/4
CS381-1	14	.313	.187	.080	1
CS382-1	20	.172	.118	.042	1
CS383-1	24	.144	.091	.028	1

BALL & SOCKET INSULATORS - FISH SPINE

Catalog No.	Wire Gauge	Width	Dimensions Dia.	Length	No. Pcs. Per Lb.
CS340	17-20	.11	.056	.11	18,160
CS341	16	.17	.068	.17	5,200
CS342	14	.20	.092	.20	3,100
CS344	8	.26	.156	.26	1,720
CS346	8	.40	.156	.40	360
CS347	6	.40	.180	.40	405
CS349	4	.54	.240	.54	160

ALUMINA INSULATORS

Maximum Continuous Temperature 3000°F (1650°C)
Maximum Intermittent Temperature 3300°F (1815°C)

— FEATURES —

- Excellent High Temperature Insulation
- Good Electrical Properties • Good Mechanical Properties
- Use for Precious Metal Thermocouples R, S, B, Platinum II

ROUND-DOUBLE HOLE

Catalog No.	Wire Gauge	Dimensions Dia.	Inches* Bore	Length
2HRAL.083-12	24-30	.083	.024	12
2HRAL.083-18	24-30	.083	.024	18
2HRAL.083-24	24-30	.083	.024	24
2HRAL.125-12	20-24	.125	.040	12
2HRAL.125-18	20-24	.125	.040	18
2HRAL.125-24	20-24	.125	.040	24
2HRAL.125-36	20-24	.125	.040	36
2HRAL.177-12	18-20	.177	.047	12
2HRAL.177-18	18-20	.177	.047	18
2HRAL.177-24	18-20	.177	.047	24

ROUND-FOUR HOLE

4HRAL.083-12	24-30	.083	.024	12
4HRAL.083-24	24-30	.083	.024	24
4HRAL.138-12	20-24	.138	.040	12
4HRAL.138-24	20-24	.138	.040	24
4HRAL.177-12	18-20	.177	.047	12
4HRAL.177-24	18-20	.177	.047	24

* Plus or minus 1% or plus or minus .005", whichever is greater.

Your Area Representative



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www.c-temp.com