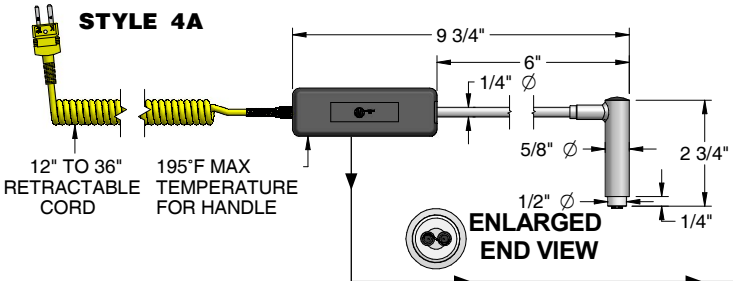
SURFACE SENSORS

The JMS Brush Thermocouple can be used in applications in which a surface temperature of a stationary or moving electrically conducting surface is needed.

True temperature measurement of a surface is very hard to obtain. Previous designs called for the probe to fully contact with as small a junction as possible, spring load with as even pressure as possible, insulate around the surface to be measured, or combinations of all these methods.

All of the above methods have proven to have their own particular faults. When compared to an infrared sensor, which does accurately measure surface temperature (unit must have correct emissivity adjustment), most of the above mentioned sensors either read much hotter or colder than the infrared. However, even the infrared style exhibits problems when emissivity levels fall beneath 0.4 or less (most metallic surfaces). JMS has applied for a patent on this brush sensor because of its unique design and widespread application. The JMS brush probe eliminates emissivity, surface contact and heat wicking considerations.

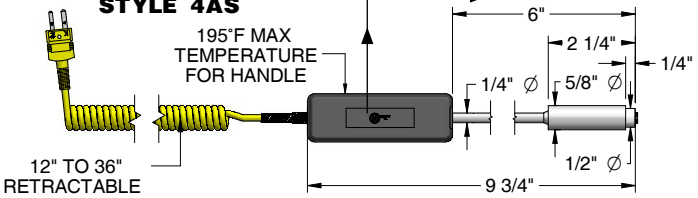
STYLE 4A



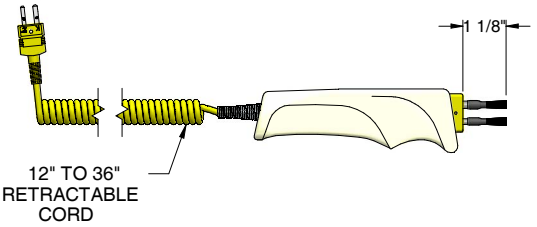
ENLARGED END VIEW

For optional contoured handle, add C after 4A / 4AS

STYLE 4AS



ENLARGED END VIEW



TEMPERATURE RATING IS BASED ON T/C TYPE

#1	STYLE	(See illustrations above & to the right)	
4A*	Hand held (90° design) with square handle -- 4AC for contoured	4BK*	Specialty brush sensor
		4B*	Permanent mount
		4PADT**	Large pad
		4PADL**	Small pad surface
4AS*	Hand held (straight design) with square handle -- 4ASC for contoured	4SA	Surface adhesive

*Not available as RTD
**Not available as Thermocouple

#2	COLD END TERMINATION [Additional options see Pg 1-7]
A	Bare ends
B	Miniature plug
C	Standard plug
X	Other, specify
Z	N/A

#3	SURFACE SENSOR		
J	J thermocouple	X	Other, specify
K	K thermocouple		
2*	2 wire RTD		
3*	3 wire RTD		
4*	4 wire RTD		

*Not available as brush

#4	LEADWIRE TYPE & LENGTH		
S	Coil-cord (Standard)	Z	N/A
3__"	Teflon		
5__"	Kapton w/ SS overbraid		
X	Other, specify		

#5	# OF REPLACEMENT TIPS		
0	No sets	Z*	N/A
1 +	Number of sets		

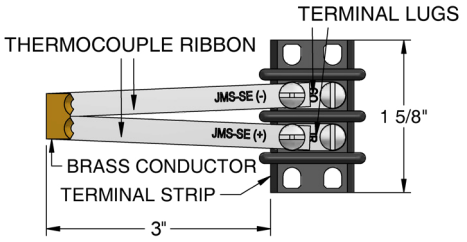
*Standard for styles 4B, 4PADL,4PADT, 4SA

Note: Thermocouple wire is 24 AWG solid conductors. RTD wire is 28 AWG stranded conductors.

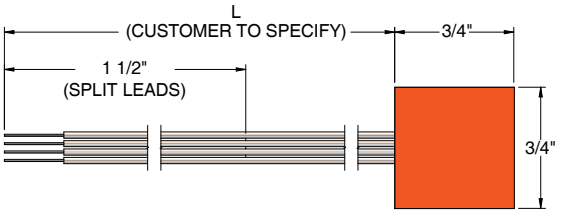
The JMS pad RTD is a 100 Ohm platinum RTD with an alpha of 0.00385 Ω/Ω/°C. Pad material is a high temperature silicone material. The pad style RTD has an effective operating range from -80C to 200C and its tolerance is 0.15 F(+/-0.15C at 0°C). Additional silicone leadwire is configured as a 3 or 4 wire RTD. Higher temperature configurations can be designed.

4A*	A	J	S	0

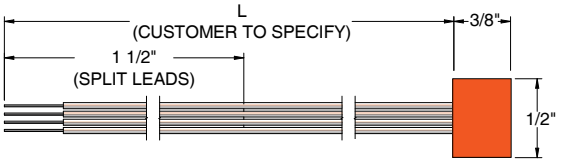
STYLE 4B



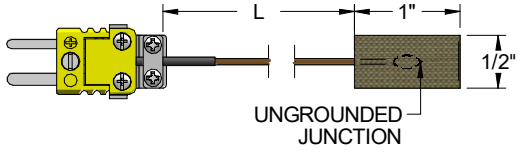
STYLE 4PADT



STYLE 4PADL



STYLE 4SA



ADDITIONAL TERMINATIONS

COLD END TERMINATION [SEE SECTION 6] Choose as many as applicable (JMS part number prefixes are shown in parenthesis)

Connectors

	Plugs		Jacks
B	Miniature plug (6A1B)	D	Miniature jack (6A1D)
BH	Miniature high temperature plug (6A2B) <800°F	DH	Miniature high temperature jack (6A2D) <800°F
C	Standard plug (6A1C)	E	Standard jack (6A1E)
F	Standard high temperature plug (6A2C) <800˚F	G	Standard high temperature jack (6A2E) <800˚F
WM	Microphone style plug (6DA)	WF	Microphone style jack (6DA)
WA	Solid pin plug, heavy duty (6A3C)	WB	Solid pin jack, heavy duty (6A3E)
WC	Jab in plug (6A4C)	WD	Jab in jack (6A4E)
WE	Ultra high temperature plug, glazed (6A5C) <1200°F	WG	Ultra high temperature jack, glazed (6A5E) <1200°F
WH	Ultra high temperature plug, unglazed (6A7C) <1200°F	WI	Ultra high temperature jack, unglazed (6A7E) <1200°F
WJ	Low noise plug (6A6C) <425°F	WK	Low noise jack (6A6E) <425°F
WL	DIN-IEC microphone plug (6DB)	WN	DIN-IEC microphone style jack (6DB)
V	Molded/water resistant plug (6DC)	VF	Molded/water resistant jack (6DC)
Y	M12 Male connector (6DY)	YF	M12 Female connector (6DY)
WQ	Miniature locking plug (6A8B2)	WR	Miniature locking jack (6AIDL2)
WS	Standard plug, locking (6A8C2)	WT	Standard jack, locking (6A8E2)

Heads

[6–1] Visit *www.JMS-SE.com/headspecs*

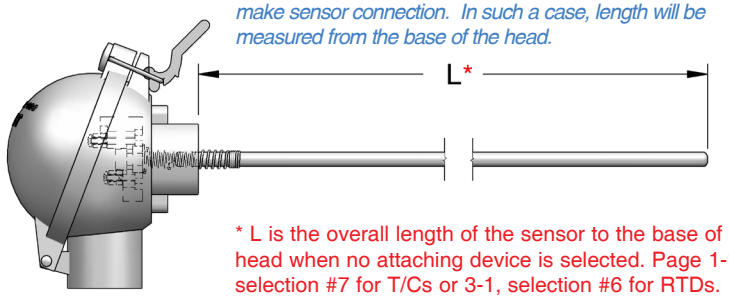
Explosion Proof

I	Aluminum, NEMA 4X, FM, CSA, IP68 (6IA)
J	316 stainless steel, NEMA 4X, FM, CSA, IP68 (6ISS)
P	Aluminum, NEMA 4X, FM, CSA, ATEX, IECEx, IP68 (6IAIEC)
U	316 stainless steel, NEMA 4X, ATEX, IP68 (6ISSATEX)
SI	Cast Iron, NEMA 3, 4, UL, CSA (6I)
GA	Aluminum, screw cover w/ indicating window, NEMA 4X, ATEX, IECEx, FM, CSA, IP68 (688A1)
GS	316SS, screw cover w/ indicating window, NEMA 4X, ATEX, IECEx, FM, CSA, IP68 (688S1)

General Purpose

L	Aluminum w/ hinged cover (6L)
M	Aluminum w/ screw cover & chain (6M)
R	Aluminum w/ hinged high dome cover (6R)
N	Cast Iron w/ screw cover (6N)
Q	Black plastic (6Q)
SS	316 stainless steel w/ screw cover & chain (6SS)
WP	White plastic, screw cover, Sanitary (6WP)
SB	Nickel plated, cylinder style, 1/4" NPT (6S250)
SD	Nickel plated, cylinder style, 1/8" NPT (6S125)
SC	Stainless steel, socket cap style
ST	Molded plastic, mini head, 1/4" NPT, < 350F (6T)
SU	Molded plastic, mini head, 1/4" NPT, < 800F (6U)

Some applications may have pre-existing threaded pipes or protection tubes where no attaching device is needed to make sensor connection. In such a case, length will be measured from the base of the head.



* L is the overall length of the sensor to the base of the head when no attaching device is selected. Page 1-1, selection #7 for T/Cs or 3-1, selection #6 for RTDs.

Transmitters [8-1 to 8-3]

Notes:
- Add span range after transmitter selection. Example: 8H(0-200C).
- Transmitter output = 4 - 20 mA. (See section 8 for other options).

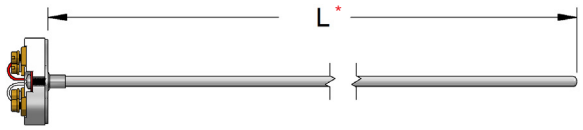
8H	Isolated transmitter
8N	Non-isolated transmitter
8I	Hart Protocol
8E	Intrinsically safe
8D	Hart/Intrinsically safe

8PA	Explosion proof, IP66/IP68, NEMA 4X, ATEX/IECEx, FM/CSA, Aluminum, threaded cap with glass viewing window, touch programmable [8-2]
8PS	Explosion proof, IP66/IP68, NEMA 4X, ATEX/IECEx, FM/CSA, 316 SS, threaded cap with glass viewing window, touch programmable [8-2]

8M Integral transmitter (see page 3-5) RTDs ONLY

Other

A	Bare ends
K	Spade lugs (6SL)
RL	Ring lugs (6RL)
O	Open ceramic terminal block, brass screw terminal (6B)
OA	Open Bakelite terminal block, nickel plated screw terminal (6BB)
OB	Open ceramic terminal block for sensors with bayonet style connection, brass screw terminal (6B or 6C)
OG	Ceramic terminal block, brass screw terminal (6G)
OP	Pluggable polymide terminal block, nickel plated screw terminal (6PT)
OS	Open ceramic terminal block, nickel plated solder terminal (6C)
CG	Cord connector/grip, aluminum 1/2" NPT (6CC)
TB	Conduit bushing, ¾" NPT male X ½" NPT female, plated steel (6IRB)
X	Other, specify



* L is the overall length of the sensor to the base of the terminal block mounting plate when open terminal block cold end termination is selected without a fixed attaching device. Page 1-1, selection #7 for T/Cs or 3-1, selection #6 for RTDs.