

High Reliability Surface Temperature Sensor Model 0118MF

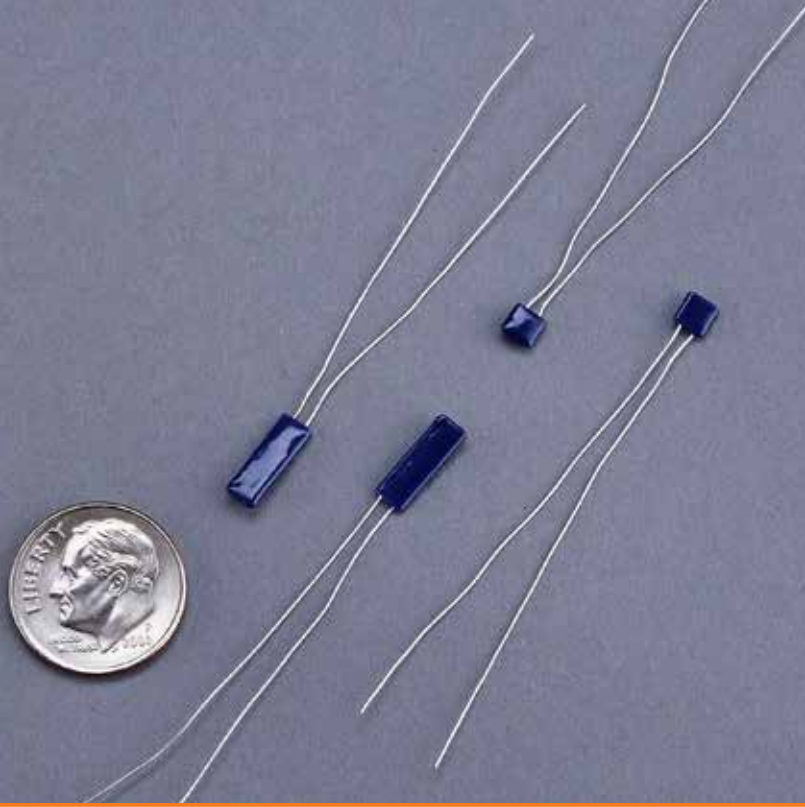


Image courtesy UTC Aerospace Systems, ISR & Space Systems

Where ingenuity takes off™



UTC Aerospace Systems



High Reliability Surface Temperature Sensor

Model 0118MF

Model 0118MF has a space heritage that can be traced to the early 1960's. Known then as Rosemount Engineering Company, UTC Aerospace Systems has participated in the U.S. space program almost from its genesis by supporting Project Mercury followed by the Saturn, Apollo, and Space Shuttle programs as well as Orion and Space Launch System.

Additionally, we have participated in most major space programs and the International Space Station. UTC Aerospace Systems' instruments can be found on the Atlas V, Delta IV/RS-68, Ariane 5/Vulcain and K-1/NK-33, as well as a myriad of satellites and scientific exploration vehicles. Our sensors are making measurements out of our solar system (Voyager 1 and 2) on Mars (Spirit and Opportunity Rovers) and have been on Saturn's moon Titan (Huygens Probe).

Model 0118MF is a general purpose surface temperature sensor designed to measure temperatures in the range of -269°C to $+400^{\circ}\text{C}$. The sensing element is made of pure platinum encapsulated in ceramic insulation. This sensor is intended for demanding applications where precision, accuracy, and long-term stability are critical requirements. The space heritage of the 0118MF can be traced to the early 1960's.

Features

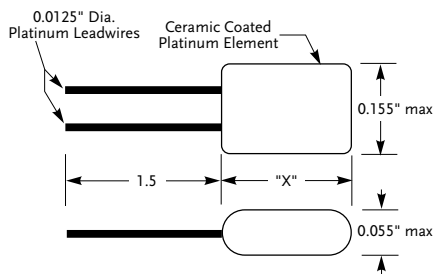
- Small size
- High reliability
- Linear output
- Wide temperature range
- Small installation footprint
- Recommended for space vehicles

General Specifications

Temperature	-269°C to +400°C
Resistance (0°C)	100 ohms to 5,000 ohms
Nominal Alpha	0.00389Ω/Ω/°C from 0°C to 100°C
Calibration	0°C; to establish a sensor specific R vs T table, optional multi-point calibrations are available; all calibration temperatures traceable to NIST.
Insulation Resistance	10 megohms min. with 100 VDC applied
Thermal Hysteresis	0.1% max of temperature span encountered between readings
Time Constant	0.6 seconds in oil flowing at 3 fps
Repeatability	≤0.1°C at 0°C when exposed to 20 temperature shocks from liquid nitrogen to +150°C air
Self-Heating	46mW with a temperature rise of <1°C in oil flowing at 3 fps at 25°C ±5°C
Vibration	MIL-STD-810C, method 514.2, procedure V, level U & AP
Compatibility	Suitable for use in any non-conductive fluid or environment that is compatible with platinum and a metal oxide ceramic
Humidity	Not susceptible to moisture absorption in moderate humidity atmospheres if the leads are suitably protected
Sensor Weight	0.35 g max.
Interchangeability	

0°C Resistance Tolerance		
	%	0°C Error
Standard	±1.0%	±2.56°C
Optional	±0.5%	±1.28°C
Optional	±0.25%	±0.64°C
Optional	±0.1%	±0.26°C

Product Envelope



Length "X" = 0.155" max. for ice-point resistances of 500 ohms or less
 Length "X" = 0.450" max. for ice-point resistances of greater than 500 ohms up to 2000 ohms

Resistance-Temperature Relationship and Table

Temperature (°C)	Ice-Point Resistance			
	100Ω	500Ω	1000Ω	2000Ω
-260	0.24	1.25	2.25	5.41
-240	2.53	12.67	25.14	50.43
-220	8.92	44.62	89.08	179.50
-200	17.22	86.10	172.07	345.62
-180	25.90	129.50	258.92	519.40
-160	34.54	172.64	345.24	692.06
-140	43.04	215.14	430.25	862.06
-120	51.42	257.03	514.06	1029.62
-100	59.69	298.43	596.86	1195.12
-80	67.89	339.41	678.84	1358.89
-60	76.01	380.03	760.09	1521.16
-40	84.07	420.33	840.67	1682.04
-20	92.06	460.31	920.63	1841.64
0	100.00	500.00	1000.00	2000.00
20	107.87	539.36	1078.62	2157.23
40	115.69	578.49	1156.79	2313.56
60	123.47	617.39	1234.53	2468.99
80	131.21	656.05	1311.83	2623.54
100	138.90	694.50	1388.70	2777.20
120	146.55	732.72	1465.14	2929.98
140	154.15	770.71	1541.15	3081.88
160	161.71	808.48	1616.74	3232.92
180	169.22	846.03	1691.89	3383.08
200	176.69	883.36	1766.64	3532.38
220	184.12	920.46	1840.96	3680.82
240	191.51	957.34	1914.85	3838.40
260	198.85	994.01	1988.33	3975.12
280	206.15	1030.46	2061.39	4120.98
300	213.40	1066.68	2134.03	4265.98
320	220.61	1102.68	2206.24	4410.12
340	227.78	1138.47	2278.04	4553.40
360	234.91	1174.03	2349.42	4695.82
380	241.99	1209.37	2420.37	4837.38
400	249.03	1244.49	2490.91	4978.07

High Reliability Surface Temperature Sensor

Model 0118MF

Ordering Information

Code	R ₀ — Ice Point Resistance Options	
100-2000	100, 500, 1000 and 2000 ohm (consult factory for other R ₀ values)	
Code	Leadwire Configuration	
A	2 Wire — 1.5" Platinum	
B	3 Wire — 1.5" Platinum	
C	4 Wire — 1.5" Platinum	
Code	Interchangeability	
Blank	±1.0%	
A	±0.5%	
B	±0.25%	
C	±0.1%	

Typical Model # 0118MF	100	A
---------------------------	-----	---

Rosemount Aerospace™

For additional information:
 14300 Judicial Road, Burnsville, MN 55306 U.S.A.
 Tel: +1 952 892 4000
 Fax: +1 952 892 4800
 sis@utas.utc.com

This document does not contain any export controlled technical data.

utcaerospacesystems.com



Scan code for more information.

