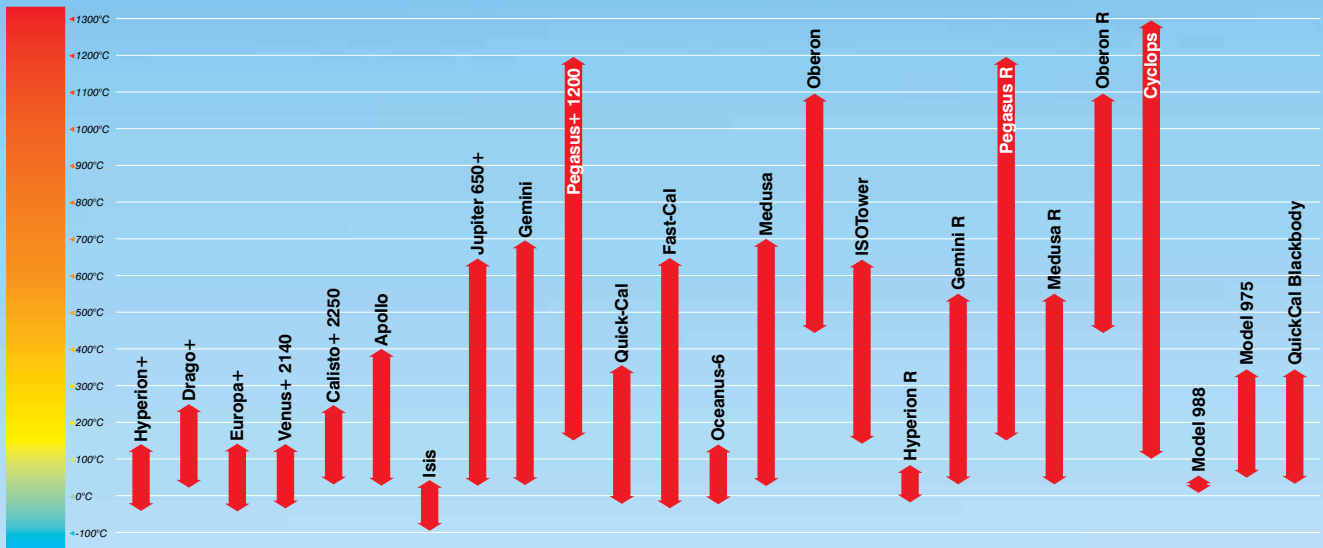


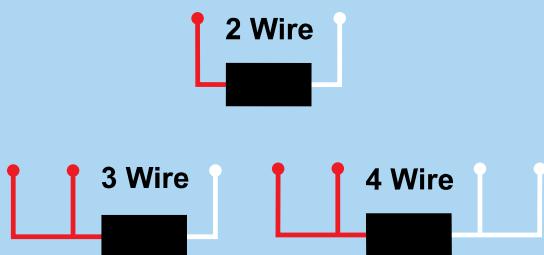
# Thermometer & Thermocouple Reference



## Minimum Calibration Points to Enable Coefficients to be calculated for a Platinum Resistance Thermometer

IPRTs	Required Points		Number of Points
Temp > 0°C	0°C and two positive values	$R_t = R_0(1 + At + Bt^2)$	3
Temp < 0°C to > 0°C	0°C, two positive values and one negative value	$R_t = R_0[1 + At + Bt^2 + C(t-100^\circ\text{C})^3]$	4
<b>ITS-90</b>	<b>Required Points</b>		
0.01 – 29.76°C	0.01°C      29.76°C		2
0.01 – 156°C	0.01°C      156°C		2
0.01 – 232°C	0.01°C      156°C      232°C		3
0.01 – 419°C	0.01°C      232°C      419°C		3
0.01 – 660°C	0.01°C      232°C      419°C      660°C		4
0.01 – 962°C	0.01°C      232°C      419°C      660°C      962°C		5
-38 – 29.76°C	-38°C      0.01°C      29.76°C		3
-189 – 0.01°C	-189°C      -38°C      0.01°C		3

## Platinum Resistance Thermometer Identification



## Summary Table of some ITS-90 Fixed Points

Substance	Temp. K	Temp. °C	State
Argon	83.8058	-189.3442	Triple
Mercury	234.3156	-38.8344	Triple
Water	273.16	0.01	Triple
Gallium	302.9146	29.7646	Melt
Indium	429.7485	156.5985	Freeze
Tin	505.078	231.928	Freeze
Zinc	692.677	419.527	Freeze
Aluminium	933.473	660.323	Freeze
Silver	1234.93	961.78	Freeze

<b>T</b> Copper / Copper Nickel	<b>S</b> Platinum / Platinum Rhodium 10%	<b>R</b> Platinum / Platinum Rhodium 13%	<b>N</b> Nickel Chromium / Silicon / Nickel Silicon	<b>K</b> Nickel Chromium / Nickel Aluminium	<b>J</b> Iron / Copper Nickel	<b>E</b> Nickel Chromium / Copper Nickel
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# ISOTECH

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