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F900 & F18 Primary Standard Thermometry Bridges

In world class metrology, the most important consideration is the quality of the fundamental measurement. ASL's F900 and F18 AC bridge technology represents the peak of performance in resistance thermometer measurement and exploits the inherent advantages of AC bridge technology to maintain repeatable measurements of the highest precision under practical operating conditions.

- **Accuracy:**
$\pm 20\text{ppb}$ ($\pm 5\mu\text{K}$) F900*
$\pm 0.1\text{ppm}$ ($\pm 25\mu\text{K}$) F18*
- **Resolution:**
0.5ppb (0.125 μK) F900*
0.003ppm (0.75 μK) F18*
- **Fast measurement time**
(2 seconds balance)
- **Differential and absolute measurement**
- **Warm up time <math>< 30</math> seconds**
- **Traceable to international standards**

* 25.5 Ω SPRT referenced to a 25 Ω reference resistor

F900 model



The Models F900 and F18 are designed specifically for resistance thermometry to provide you with the best possible accuracy. The 25Hz or 75Hz operating frequency provides fast, continuous measurement with high immunity to thermal emfs and supply frequency noise sources. Practical measurements involve cables, connectors and imperfect operating environments, the F900 and F18 achieve their full specification under a wide range of real operating conditions.

F18 model



Bandwidth: F900 F18	Selectable: 0.5, 0.2, 0.1, 0.05, 0.02, 0.01, 0.005, 0.002, 0.001 Hz Selectable: 0.5, 0.1 or 0.02 Hz
External Standard	AC/DC standard resistor or resistance thermometer
Sensor current	0.1, 0.2, 0.5, 1, 2, 5, 10, 20, 50mA or x root 2 any value
Sensor current frequency	User selectable frequencies: 25 or 75 Hz with 50 Hz supply 30 or 90 Hz with 60 Hz supply Phase locked to supply frequency
Bridge balancing modes	Automatic: via full self balance algorithm Manual: via front panel switches (to 0.1 ppm) and analogue meter.
Self check modes	Zero: verifies bridge zero accuracy Unity: verifies bridge slope accuracy
Lead connections	True four wire connections for resistance thermometer (Rt) and standard resistor (Rs). Accuracy is unaffected by series lead resistance, permitting measurements with long cables (100 metres for 25.5 Ohm SPRT referenced to a 25 Ohm resistor)
Quadrature balance	Eliminates effects of thermometer, resistor and cable reactance
Active input guard	Eliminates effects of leakage from any terminal to ground
Analogue output	Null balance: $\pm 10V$ (unfiltered) Programmable: 0-10V (3 scale ranges)