

909

Secondary Standard Platinum Resistance Thermometers, -200°C to 670°C

The 909 economically-priced secondary standard PRT -Platinum Resistance Thermometers- are the workhorse of calibration laboratories all over the world. The wide temperature ranges from -200°C to 670°C and economic pricing make these thermometers ideal for the secondary laboratory.

Description

The 909 economically-priced Standard Platinum Resistance Thermometers are the workhorse of calibration laboratories all over the world. The wide temperature ranges from -200°C to 670°C and economic pricing make these thermometers ideal for the secondary laboratory. For smaller uncertainties to suit the Primary Laboratory refer to the 670 SPRTs.
The resistance element is of pure platinum, coiled and mounted in a strain free construction. The former is of pure alumina material and all parts have been pre-aged to eliminate contamination and strain. All joints are welded to minimize resistance changes. The leads are brought to a handle assembly where they are connected to a low loss cable, 2 m long and screened.
The 909Q model has a Quartz sheath while the 909L and 909H have metal sheaths. Quartz glass thermometers have the advantage that the internal components are visible and can be inspected and continue to be our recommended models. The low temperature models have excellent immersion characteristics and a significant cost saving when compared to the higher temperature models.
Three thermometer lengths are available, standard length 480 mm, extra length 550 mm or maximum length 600 mm.
The Model 909 is supplied in standard with a traceability certificate at Water Triple Point and Fixed Point of Gallium. Alternatively we can provide a complete UKAS calibration certificate.

Key features:

- Three stem lengths
- Wide operating range

Specifications

General specifications

Rtpw	25.5 Ω	100 Ω
Nominal resistance	25.5 Ω at 0°C	100 Ω
Recommended max current	1 mA	0.5 mA
Nominal sensitivity	0.1 Ω /°C	0.4 Ω/°C
Resistance ratio	Wga > 1.11807 as required by ITS-90	
Self-heating	1 mK / 26 µW	
Stability	Depends on the temperature range of use. See table below for typical annual stability.	
Internal leads	Four wire	
External leads	Silver-plated multi-strand wires in a low-loss insulation cable terminating in gold-plated terminals.	

Models 25.5 Ω

Reference	Temperature range	Sheath	Diameter	Length	Sensing length	Construction	Standard	Notes
909Q/25/480	-200 to 670°C	Quartz	7.5 mm	480 mm	65 mm	Sealed with dry oxygen / argon mix	ITS-90	Recommended secondary standard SPRT
909Q/25/550	-200 to 670°C	Quartz	7.5 mm	550 mm	65 mm	Sealed with dry oxygen / argon mix	ITS-90	
909Q/25/600	-200 o 670°C	Quartz	7.5 mm	600 mm	65 mm	Sealed with dry oxygen / argon mix	ITS-90	
909H/25/480	-80 to 670°C	Metal	6 mm	480 mm	65 mm	Sealed	ITS-90	Internal alumina tube protects sensor from contaminatio n
909H/25/550	-80 to 670°C	Metal	6 mm	550 mm	65 mm	Sealed	ITS-90	
909H/25/600	-80 to 670°C	Metal	6 mm	600 mm	65 mm	Sealed	ITS-90	
909L/25/	-200 to	Metal	6 mm	480 mm	65 mm	Sealed	ITS-90	Optimize

480	165°C					with dry oxygen / argon mix		d for low temperatures, less stem conduction due to internal construction
909L/25/550	-200 to 165°C	Metal	6 mm	550 mm	65 mm	Sealed with dry oxygen / argon mix	ITS-90	
909L/25/600	-200 to 165°C	Metal	6 mm	600 mm	65 mm	Sealed with dry oxygen / argon mix	ITS-90	

Models 100 Ω:

Reference	Temperature range	Sheath	Diameter	Length	Sensing length	Construction	Standard	Notes
909Q/100/480	-200 to 550°C	Quartz	7.5 mm	480 mm	65 mm	Sealed with dry oxygen / argon mix	ITS-90	Recommended secondary standard SPRT
909Q/100/550	-200 to 550°C	Quartz	7.5 mm	550 mm	65 mm	Sealed with dry oxygen / argon mix	ITS-90	
909Q/100/600	-200 to 550°C	Quartz	7.5 mm	600 mm	65 mm	Sealed with dry oxygen / argon mix	ITS-90	
909H/100/480	-80 to 550°C	Metal	6 mm	480 mm	65 mm	Sealed	ITS-90	Internal alumina tube protects sensor from contamination
909H/100/550	-80 to 550°C	Metal	6 mm	550 mm	65 mm	Sealed	ITS-90	
909H/100/600	-80 to 550°C	Metal	6 mm	600 mm	65 mm	Sealed	ITS-90	
909L/100/480	-200 to 165°C	Metal	6 mm	480 mm	65 mm	Sealed with dry oxygen / argon mix	ITS-90	Optimized for low temperatures, less stem conduction due to internal c

909L/100/550	-200 to 165°C	Metal	6 mm	550 mm	65 mm	Sealed with dry oxygen / argon mix	ITS-90	onstructi on
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Typical uncertainties of 909 SPRTs with UKAS calibration

Fixed point	°C	Range 1	Range 2	Range 3	Range 4	Range 5	Range 6
BP Nitrogen	-195.798	10 mK		10 mK	10 mK	10 mK	10 mK
TP Mercury	-38.8344	2 mK	2 mK	2 mK	2 mK	2 mK	2 mK
TP Water	0.01	1 mK	1 mK	1 mK	1 mK	1 mK	1 mK
MP Gallium	29.7646		1 mK				
FP Indium	156.5985			3 mK	3 mK		
FP Tin	231.928				3 mK	3 mK	3 mK
FP Zinc	419.527					3.5 mK	3.5 mK
FP Aluminium	660.323						10 mK

Models and accessories

909 Secondary Standard Platinum Resistance Thermometers, -200°C to 670°C
Delivered in standard with:

- Traceable certificate at Water Triple Point and Fixed Point of Gallium
- Carrying case

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