

# **AM1210 Type S Reference Standard Thermocouple User's Guide**



***AccuMac***

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# Table of Contents

<i>Before you start --- Warnings &amp; Cautions</i> .....	1
<i>1 Introduction and Specifications</i> .....	2
1.1 Introduction.....	2
1.2 Specifications.....	2
<i>2 Care and Handling Guidelines</i> .....	3
<i>3 Limited Warranty &amp; Limitation of Liability</i> .....	4

## **Before you start --- Warnings & Cautions**

- ❖ **Warnings:** Follow these guidelines to avoid personal injury:
  1. Only use this instrument in the manufacture specified temperature range.
  2. The transition junction and the lead wires of this instrument can become hot when it is used to measure high temperatures for extended periods of time.
  3. DO NOT submerge the transition junction when taking measurement.
  4. DO NOT use this instrument to measure the temperature of any hazardous live component.
  5. Follow all other safety guidelines listed in this user's guide.
  
- ❖ **Cautions:** Follow these guidelines to avoid possible damage to the instrument:
  1. Avoid mechanical shocks. DO NOT drop or slam the probe in any way. This will cause damage to the probe internally and affect its calibration and accuracy.
  2. Read Section entitled "Care and Handling Guidelines" before removing the thermocouple from the shipping box. Incorrect handling can damage the thermocouple and void the warranty.
  3. Keep the shipping container in case it is necessary to ship the thermocouple. Incorrect packaging of the thermocouple for shipment can cause irreparable damage.
  4. Calibration equipment should only be used by trained personnel.

# 1 Introduction and Specifications

## 1.1 Introduction

AM1210 Type S Reference Standard Thermocouple is constructed using reference grade Platinum and Platinum vs. 10% Rhodium alloys. It covers a temperature range of 0 °C to 1300 °C with short term stability of 0.2 °C all the way to Freezing Point of Copper (1084.62 °C). It is commonly used as reference standard to calibrate industrial thermocouples. All thermocouple wires and parts are specially cleaned and annealed before assembly. Every AM1210 thermocouple is fully annealed and tested again to meet the tolerance criteria as specified in the table below.

## 1.2 Specifications

<b>Temperature Range</b>	0 °C to 1300 °C
<b>Type</b>	Type S: Platinum/10 % Rhodium vs. platinum
<b>Long Term Drift</b>	±0.6 °C at 1084.62 °C after 1 year typical usage
<b>Tolerance (mV)</b>	$E(t_{Cu})=10.575\pm 0.015$ $E(t_{Al})=5.860+0.37(E(t_{Cu})-10.575)\pm 0.005$ $E(t_{Zn})=3.447+0.18(E(t_{Cu})-10.575)\pm 0.005$
<b>Short Term Stability</b>	±0.2 °C at 1084.62 °C
<b>Diameter of thermocouple wire</b>	0.5 mm
<b>Sheath Material</b>	Quartz or Alumina
<b>Sheath Dimensions</b>	OD: 6 mm; Length: 500 mm
<b>External Lead Wire</b>	S type thermocouple wire, 700 mm
<b>Protective Carrying Case</b>	Included

## **2 Care and Handling Guidelines**

1. DO NOT subject the thermocouple to any physical shocks and vibrations.
  - a. When not using the thermocouple, keep it in a place that's not prone to drop, slam, bang, vibration or other strong physical contacts. Use a protective box or a carrying case whenever possible.
  - b. When shipping the thermocouple, use protective box and other protective packaging materials to minimize mechanical shocks as much as possible.
  - c. When using dry blocks, make sure the well diameter is appropriate to allow the thermocouple move up and down smoothly.
  
2. DO NOT subject the thermocouple to any contaminations. Keep the thermocouple as clean as possible.
  - a. DO NOT over heat. Do not use the thermocouple above the manufacture specified temperature range.

### **3 Limited Warranty & Limitation of Liability**

Each product from AccuMac Corporation is warranted to be free from defects in material and workmanship under normal use and service.

The warranty period is 1 year for the thermocouple. The warranty period begins on the date of the shipment. Parts, product repairs, and services are warranted for 90 days. The warranty extends only to the original buyer or end-user customer of an AccuMac authorized reseller. The warranty will not be extended to products that have been misused, altered, neglected, or damaged by accident or abnormal conditions of operation or handling.

To obtain warranty service, contact AccuMac Corporation at:

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