

# ADT 875-1210 & ADT 878-1210 Thermocouple Calibration Furnaces



## Features

- Temperature control from 100°C to 1210°C
- Two models to choose from:  
Reference (ADT 878) and Standard (ADT 875)
- Display Accuracy of  $\pm 1.5^\circ\text{C}$  (ADT 878)
- Stability of  $\pm 0.1^\circ\text{C}$
- 4 on-board measurement channels (PC option)
- Process calibrator option provides a multi-channel readout for TCs, switches and transmitters, including task documentation and HART communication
- Portable, rugged and quick to temperature
- Self-calibration feature (PC option)
- Multi-zone temperature control
- Internal and external sensor control (PC option)
- Metallic interchangeable inserts
- Wi-Fi and Bluetooth capable
- Color touch screen display
- Patent pending technology

## Overview

We understand the many challenges associated with thermocouple calibration work. That is precisely why we decided to introduce the ADT875-1210 and ADT878-1210 Thermocouple Calibration Furnaces.



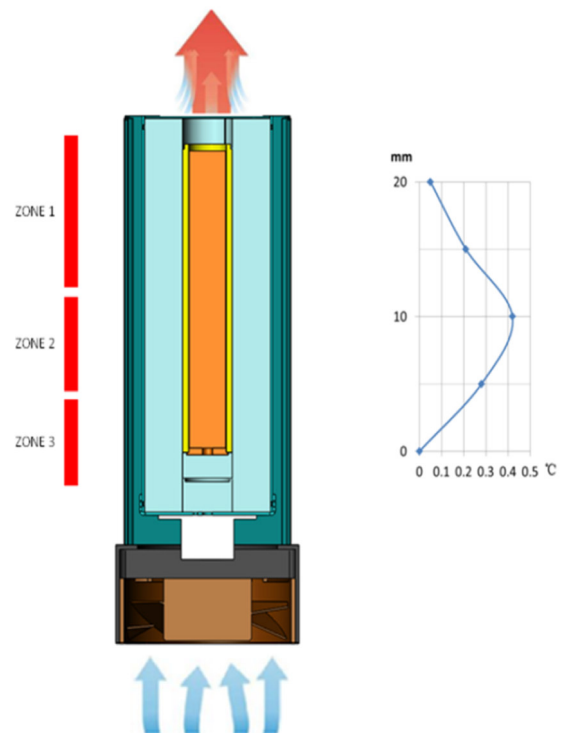
With an unmatched stability, uniformity and an optional on-board process calibrator, calibrating thermocouples has never been easier. With two separate units to choose from, the ADT875-1210 and ADT878-1210 furnaces include a patented multi-zone temperature control which provides a never before seen, highly stable and uniform heat source to ensure you get the best possible results from a modest investment. With metallic interchangeable inserts, users have the flexibility needed to service a wide variety of UUT's and the durability they have come to expect from Additel. The ADT875-1210 and ADT878-1210 can be purchased with or without our on-board process calibration electronics to provide flexibility for customers who are needing the best 1200°C heat source on the market.

If thermocouple calibration and/or verification work is part of your workload, you don't want to miss out on this opportunity to save valuable time and money with these best in class furnaces from Additel.

## Temperature Control

The Additel ADT875 & ADT878 Thermocouple Calibration Furnaces have been designed with a unique and innovative way of controlling temperature and temperature gradients. We like to call it "Advanced Adaptive Control". This exciting new design feature incorporates our patent pending wind tunnel control technology with Additel's impressive 3-zone temperature control to provide the very best uniformity and stability possible.

Each ADT875 & ADT878 is tested and calibrated in Additel's accredited laboratory (Brea, CA) to ensure that each unit is ready to go when the customer opens the package. The included accredited calibration certificate provides data relating to accuracy, stability and uniformity to help provide even more confidence in the testing and calibration of each and every ADT875 & ADT878 Thermocouple Calibration Furnace.

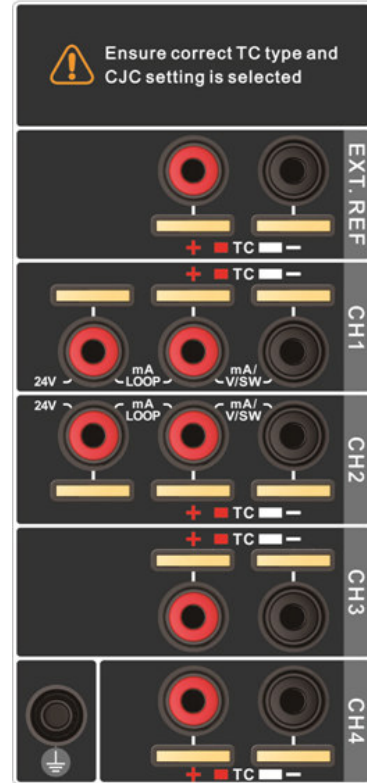


## General Specifications

Specification	875-1210	878-1210
Temperature Range	100°C to 1210°C	
Display Accuracy	± 1.2°C at 100°C	± 1.0°C at 100°C
	± 1.2°C at 300°C	± 1.0°C at 300°C
	± 1.2°C at 600°C	± 1.0°C at 600°C
	± 1.6°C at 900°C	± 1.2°C at 900°C
	± 2.0°C at 1210°C	± 1.5°C at 1210°C
Stability	± 0.1°C	
Axial Uniformity (20 mm zone)	± 0.6°C at 100°C	± 0.4°C at 100°C
	± 1.2°C at 300°C	± 0.8°C at 300°C
	± 1.5°C at 600°C	± 1°C at 600°C
	± 1.5°C at 900°C	± 1°C at 900°C
	± 1.5°C at 1210°C	± 1°C at 1210°C
Radial Uniformity	± 0.2°C at 100°C	± 0.2°C at 100°C
	± 0.3°C at 300°C	± 0.3°C at 300°C
	± 0.4°C at 600°C	± 0.4°C at 600°C
	± 0.8°C at 900°C	± 0.6°C at 900°C
	± 1.0°C at 1210°C	± 0.8°C at 1210°C
Loading Effect	± 0.5°C	
Environmental Conditions	8°C to 38°C guaranteed accuracy 0°C to 50°C, 0% to 90% RH non-condensing, 3000 M altitude for normal operation	
Storage Conditions	-20°C to 60°C	
Immersion Depth	XR style inserts = 138 mm (5.43") XS style inserts = 116 mm (4.57") (see insert ordering info for more details)	
Insert OD	24.8 mm (0.98 in)	
Heating Time	50 min.: 23°C to 1210°C	
Cooling Time	50 min.: 1210°C to 300°C	55 min.: 1210°C to 300°C
	50min.: 300°C to 50°C	55 min.: 300°C to 50°C
Typical Time to Stability	15 min	
Resolution	0.01°C	
Units	°C, °F, and K	
Display	165 mm (6.5 in) colour touch screen	
Size (H x B x T)	345 x 170 x 330 mm (13.6 x 6.7 x 13.0 in)	
Weight	10.6 kg (23.4 lbs)	
Power Requirements	90 – 254 VAC, 45-65 Hz, 580 W	
Mechanical Testing	Vibration: 2g (10-500 Hz), 30 min for 2 sides Impact: 4g three times Drop test: 500 mm (19.6 in)	
Communication	USB A, USB B, RJ45, WiFi, Bluetooth	
Localization	English, Chinese, Japanese, Russian, German	
Warranty	1 year	

**Process Electronics (Optional)**

Both the ADT875 & ADT878 can be ordered with Additel's Process Calibrator (PC) option. The Process Calibrator Option combines the many features found in a thermocouple readout device and process calibrator with the ADT875 & ADT878 Calibration Furnaces. This unique option includes Additel's patented Quick-Push connectors which accommodate virtually all TC connection types. The process option also includes the ability to measure a reference grade thermocouple and up to (4) under test channels. Channels 1 and 2 can measure mA, voltage, perform switch testing and source 24V DC. In addition to these measurement functions, the process option provides full documenting capability of creating tasks, saving "as found" and "as left" results and HART communications for simplified transmitter work. The snapshot feature allows users to capture all information displayed on the screen with a touch of the screen. This optional add-on allows for data logging of all channels using our auto step and a ramp functions. By utilizing the external reference option users can select to control to the furnace set point using an external control probe, which helps to reduce uncertainties. The external control probe feature also facilitates the handy self-calibration feature!



ADT875 & ADT878  
Process Calibrator (PC)  
option electronics

**Input Specifications (process Calibartor (PC) Option)**

Specification	ADT 875-PC-1210	ADT 878-PC-1210
TC Measurement Channels	Patented TC terminals Accepting S, R, K, B, N, E, J, T L and U	
TC Measurement Accuracy Type K Ch. 1-4 (excluding sensor)	±0.182°C at 100°C	±0.172°C at 100°C
	±0.266°C at 300°C	±0.236°C at 300°C
	±0.310°C at 600°C	±0.251°C at 600°C
	±0.397°C at 900°C	±0.304°C at 900°C
	±0.517°C at 1210°C	±0.382°C at 1210°C
TC Range	-75 mV to 75 mV (UUT Channels 1-4) -18 mV to -18 mV (Reference Channel)	
TC Resolution	0,0001 mV, Input Impedance <10 Ω	
TC Voltage Accuracy	0.02% RD + 8µV (ch. 1-4)	0.01% RD + 8µV (ch. 1-4)
	0.01% RD + 2µV (ref. ch.)	0.005% RD + 2µV (ref. ch.)
Internal CJC Accuracy	±0.35°C (ch. 1-4)	±0.30°C (ch. 1-4)
	±0.25°C (ref. ch.)	±0.20°C (ref. ch.)
Current Range	-30 mA to 30 mA	
Current Accuracy	±(0.02% RD + 2 µA)	±(0.01% RD + 0.2 µA)
Current Resolution	0.0001 mA	

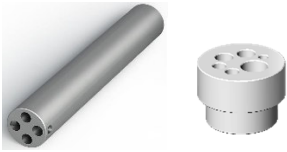




Specification	ADT 875-1210	ADT 878-1210
Voltage Ranges	-12 V to 12 V and -30 V to 30 V	
Voltage Accuracy	$\pm(0.02\% \text{ RD} + 2 \text{ mV})$	$\pm(0.01\% \text{ RD} + 0.6 \text{ mV})$
Voltage Resolution	0.0001 V, Input Impedance > 1 M $\Omega$	
DC 24V Output	24 V $\pm$ 10%, max 60 mA	
Hart Communication	Optional (ADT875PC and ADT878PC Models)	
Temperature Coefficient 0°C to 8°C and 38°C to 50°C	TC Readouts: $\pm 5 \text{ ppm}/^\circ\text{C}$ Current: $\pm 5 \text{ ppm}/^\circ\text{C}$ Voltage: $\pm 5 \text{ ppm}/^\circ\text{C}$	
Switch Test	Mechanical or Electrical – Channels 1 & 2 only	
Documentation	Up to 1,000 tasks which store up to 10 results each containing as found and as left data. Snap shot feature allows for screen captures. Records auto step and ramp functions.	

### TC Measurement Specification and Calculation (Process Calibrator (PC) Option)





TC Type	Temperature °C	Error(°C) <sup>[1]</sup>		TC Type	Temperature(°C)	Error (°C) <sup>[1]</sup>	
K (CH1 – CH4)	100	$\pm 0.182$	$\pm 0.172$	S (CH1 – CH4)	100	$\pm 1.102$	$\pm 1.094$
	300	$\pm 0.266$	$\pm 0.236$		300	$\pm 0.924$	$\pm 0.899$
	600	$\pm 0.310$	$\pm 0.251$		600	$\pm 0.888$	$\pm 0.837$
	900	$\pm 0.397$	$\pm 0.304$		900	$\pm 0.868$	$\pm 0.793$
	1210	$\pm 0.517$	$\pm 0.382$		1210	$\pm 0.865$	$\pm 0.765$
N (CH1 – CH4)	100	$\pm 0.273$	$\pm 0.264$	R (CH1 – CH4)	100	$\pm 1.080$	$\pm 1.072$
	300	$\pm 0.270$	$\pm 0.243$		300	$\pm 0.869$	$\pm 0.844$
	600	$\pm 0.309$	$\pm 0.256$		600	$\pm 0.804$	$\pm 0.755$
	900	$\pm 0.368$	$\pm 0.286$		900	$\pm 0.771$	$\pm 0.699$
	1210	$\pm 0.455$	$\pm 0.335$		1210	$\pm 0.766$	$\pm 0.670$
E (CH1 – CH4)	100	$\pm 0.136$	$\pm 0.126$	B (CH1 – CH4)	250	$\pm 3.182$	$\pm 3.170$
	300	$\pm 0.153$	$\pm 0.130$		300	$\pm 2.645$	$\pm 2.631$
	600	$\pm 0.210$	$\pm 0.154$		600	$\pm 1.409$	$\pm 1.379$
	900	$\pm 0.291$	$\pm 0.202$		900	$\pm 1.049$	$\pm 1.003$
	1000	$\pm 0.297$	$\pm 0.196$		1210	$\pm 0.905$	$\pm 0.839$
L (CH1 – CH4)	100	$\pm 0.223$	$\pm 0.214$	T (CH1 – CH4)	100	$\pm 0.194$	$\pm 0.185$
	300	$\pm 0.271$	$\pm 0.241$		300	$\pm 0.191$	$\pm 0.166$
	600	$\pm 0.308$	$\pm 0.251$		400	$\pm 0.217$	$\pm 0.183$
	900	$\pm 0.522$	$\pm 0.448$				
U (CH1- CH4)	100	$\pm 0.270$	$\pm 0.261$	S (Ext.Ref)	100	$\pm 0.277$	$\pm 0.273$
	300	$\pm 0.189$	$\pm 0.164$		300	$\pm 0.242$	$\pm 0.229$
	600	$\pm 0.227$	$\pm 0.176$		600	$\pm 0.249$	$\pm 0.224$
					900	$\pm 0.258$	$\pm 0.224$
J (CH1 – CH4)	100	$\pm 0.186$	$\pm 0.177$	R (Ext.Ref)	1210	$\pm 0.266$	$\pm 0.216$
	300	$\pm 0.197$	$\pm 0.168$		100	$\pm 0.271$	$\pm 0.266$
	600	$\pm 0.256$	$\pm 0.200$		300	$\pm 0.228$	$\pm 0.216$
	900	$\pm 0.281$	$\pm 0.197$		600	$\pm 0.227$	$\pm 0.202$
	1200	$\pm 0.414$	$\pm 0.294$		900	$\pm 0.230$	$\pm 0.194$
				1210	$\pm 0.240$	$\pm 0.192$	

[1]Excluding cold junction compensation errors.

**Accessories**

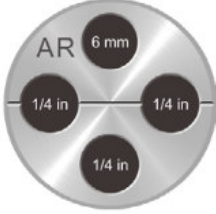


Standard Accessories		
Model	Quantity	Picture
Calibration Furnace and selected Insert & insulator	1 pc.	
Power adapter	1 pc.	
USB Cable	1 pc.	
Insert removal tool	1 pc.	
Test leads (ADT875PC only)	2 Sets (6 pcs.)	
US-accredited Certificate of calibration (optionally DAkkS Calibration)	1 pc.	
Manual	1 pc.	



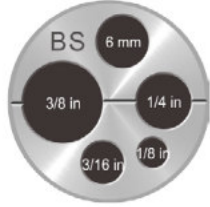
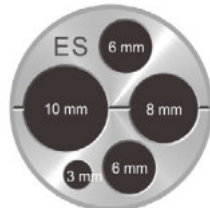


<b>Optional Accessories</b>		
Model	Description	Picture
9915-878	Carry case for ADT875-1210 or ADT878-1210 with wheels	
ADT110-87X-TC-Insert-XX	Insert for ADT875-1210 or ADT8787-1210 (see insert ordering information on the next page)	
AM1210-12	Reference-TC Type S; Platinum/ 10% Rhodium vs. Platinum – 12" length (see AM1210 specs below)	
9080	Cable Kit (includes TC plug, compensation cable, S,R,B,K,J,T,E,N)	

<b>AM-1210-12 Typ S Reference Standard Thermocouple</b>	
Temperature Range	0°C to 1300°C
Type	Type S; Platinum/ 10% Rhodium vs. Platinum
Long Term Drift	±0.5°C at 1084.62°C after 1 year typical use
Short Term stability	±0.2°C at 1084.62°C
Diameter of thermocouple wire	0.5 mm
Sheathed Material	Aluminium
Seath Dimensions	OD: 6 mm (0.236") Length: 305 mm (12.0")
Protective Carrying Case	Included
Documentation	Report of test with data (DAkkS Calibration on demand)

**Insert Information**

Reference Style inserts 138 mm (5.43") hole depth -for use with both 875 and 878			
Model	Specification	Model	Specification
<b>AR</b>		<b>HR</b>	
	<b>DR</b>		

Short Style inserts 116 mm (4.57") hole depth- only for the ADT875-1210 model			
Model	Specification	Model	Specification
<b>CS</b>		<b>GS</b>	
	<b>BS</b>		
<b>ES</b>		<b>FS</b>	