Additel
Metrology Made Simple

Additel 835
Portable Calibration Bath

- **Engineered for exceptional portability and performance**
- **Extended temperature range: -30 C to 250 C**
- **High-precision accuracy: ±0.1 C**
- **Compatible with a wide range of probe types and sizes**
- **Optional built-in multifunction process calibrator**
- **Quick to temperature**
- Delivers outstanding stability and uniformity
- Fast thermal response for efficient operation
- Features advanced dual-zone heating technology
- One touch self-calibration
- Designed with robust electromagnetic interference protection

OVERVIEW

The ADT835 is a portable calibration bath with a compact bath size of 3.54 x 3.54 inches (90 x 90 mm), setting a new benchmark for powerful, space-saving calibration solutions. Unlike typical integrated dry-liquid baths, the ADT835 delivers exceptional versatility—accommodating temperature sensors of virtually any type, size, or shape. Its innovative design supports both batch and field calibrations with ease, while maintaining excellent stability, uniformity, and accuracy. Combining the precision and reliability of a traditional calibration bath with the portability of a dry well, the ADT835 is a dependable choice for demanding calibration environments.

The ADT835 delivers exceptional performance through a smart, user-focused design. Its advanced data logging capabilities simplify documentation and help minimize errors or missed readings. Built-in application tools enhance workflow efficiency, while intelligent remote control functionality allows for multitasking and increased productivity. The 6.5-inch TFT touchscreen provides an intuitive interface, making operation straightforward—even for first-time users.

Rev # 20250612

Additel

Metrology Made Simple

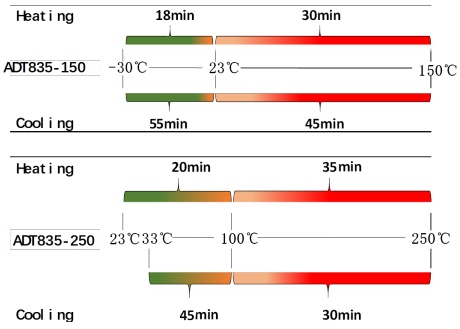
Accelerated Heating and Cooling for Maximum Efficiency

Efficient calibration depends on fast temperature transitions, minimal stabilization times, and sufficient bath capacity. The ADT835 delivers on all fronts with advanced variable-speed prediction and non-overshoot control technology, achieving an accuracy error band of ±0.1°C throughout the heating and cooling process.

ADT835-150 / ADT835PC-150: Heats to 150°C in 30 minutes, cools to -25°C in 45 minutes, and to -30°C in 55 minutes.

ADT835-250 / ADT835PC-250: Heats to 250°C in 55 minutes, cools to 100°C in 30 minutes, and to 33°C in 45 minutes.

These rapid thermal response times dramatically reduce calibration cycles compared to traditional calibration baths, significantly improving throughput and overall productivity.

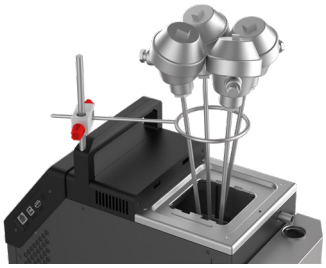


Versatile Sensor Calibration with the ADT835

Calibrating a wide range of temperature sensors is a challenge, particularly in industries like pharmaceuticals, biotechnology, and food processing, where specialized or sanitary sensors are common. These sensors often feature large flanges, ferrule nuts, or short probes, making on-site calibration with traditional dry wells difficult and costly. Users may need to invest in custom dry wells, yet still face limitations in achieving accurate results. The ADT835 portable calibration bath addresses these challenges by providing a stable and uniform temperature field, ensuring precise calibration for sensors of various types, sizes, and shapes, without the need for custom solutions.

Enhanced Efficiency for Batch Calibration

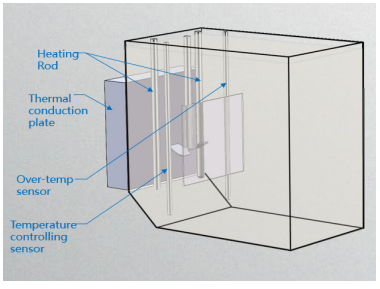
Maximizing calibration efficiency directly reduces factory downtime. To facilitate batch calibration, portable temperature sources must accommodate multiple sensors simultaneously. The ADT835 features a bath size of 90mm x 90mm with a depth of 155mm, enabling the calibration of multiple sensors in one operation. This capacity supports the simultaneous calibration of up to four 50mm diameter sanitary temperature sensors or up to forty 6.35mm diameter rod-type temperature sensors, significantly improving operational efficiency



Innovative Dual Heating Technology for Enhanced Stability

Field environments often introduce challenges like power fluctuations from heavy equipment, inconsistent airflow from industrial fans, and ambient temperature shifts caused by variable-frequency air conditioning systems. These factors can significantly impact calibration bath performance and compromise temperature control stability.

The ADT835 overcomes environmental challenges with its innovative dual-zone heating technology. An external heating system near the vapor chamber delivers stable, consistent temperature control, while an internal heating element immersed in the fluid provides rapid, dynamic response to disturbances. This advanced design greatly improves resistance to external interferences, ensuring reliable and accurate performance—even in demanding field conditions.



Rev # 20250612

Additel
Metrology Made Simple

Optional Integrated Three-Channel High-Precision Process Calibrator

The ADT835 offers an optional built-in three-channel multifunction high-precision process calibrator, designed to streamline field operations. This feature eliminates the need to carry multiple devices on-site.

The integrated calibrator combines the functions of a thermometer, multimeter, 24V power supply, and HART handheld communicator, enabling the ADT835 to manage a wide range of calibration tasks effectively.

Each channel is equipped with quick push connectors, allowing for tool-free, rapid connections regardless of the connector type. Channel 1 serves as a reference channel, compatible with smart secondary reference PRTs or user-provided reference thermometers. Channels 2 and 3 are designated for device under test (DUT) connections, supporting RTDs, thermocouples (TCs), temperature transmitters, HART temperature transmitters, and temperature switches.

Automated Self-Calibration for Internal Reference Sensor

Periodic calibration is essential for maintaining temperature control accuracy in calibration baths. Traditional methods involve manually recording and calculating errors at each calibration point, a process that can be time-consuming and complex, often taking over an hour.

The ADT835 simplifies this with its automated self-calibration program. This feature eliminates the need for manual data entry and calculations, streamlining the calibration process and ensuring accurate temperature control with minimal user intervention.

Remote Control for Parallel Operation

The ADT835 features advanced remote control capabilities to facilitate parallel operations:

Point-to-Point Mode: Connects to a mobile phone or computer via Bluetooth or WiFi hotspot, allowing direct operation of the bath from these devices.
Cloud Mode: Connects to the network through WiFi or LAN port, enabling remote management of multiple calibration baths via mobile phones or computers in point-to-point mode.
These smart remote control options enhance operational flexibility and efficiency.

Advanced Fluid Protection Design for Ease of Use and Maintenance

The ADT835 incorporates a professional fluid protection design to ensure safe and convenient operation. It features an integrated overflow tank and drain port to manage fluid efficiently and facilitate easy transport, mitigating environmental contamination and safety risks. The bath and tank body are constructed from rust-resistant stainless steel, which is easy to clean and durable, even in the presence of irritating or corrosive contaminants.

The ADT835 also includes a sealed top cover with a hand-tight screw to effectively prevent fluid spill during transport and calibration. Additionally, a protective power switch design minimizes the risk of oil mist accumulation on power switch contacts, enhancing reliability and reducing failure likelihood. For user safety, a temperature warning icon appears on the display when the liquid temperature exceeds 50°C, alerting users to prevent accidental burns. These features collectively enhance the safety, usability, and maintenance of the ADT835 calibration bath.

Rev # 20250612

Additel
Metrology Made Simple

SPECIFICATIONS

General Specifications

Specification	*Description*
Power requirements	Power supply 110V: 100~120V, 50 Hz/60Hz, fuse: T8A 250V 220V: 200~230V, 50 Hz/60Hz, fuse: T4A 250V Maximum power consumption: 800W
Size and weight	Main structure size: 7.5 × 16.2 × 15.2 in (191(W)×412(H)×387(D)mm) Maximum size: 7.5 × 18.1 × 16.77 in (191(W)×460(H)×426(D)mm) (with handle, overflow tube) Weight: 35.27 lbs (16 kg) /ADT835-155 and 35.94 lbs (16.3 kg) /ADT835PC-155 30.86 lbs (14 kg)/ADT835-250 and 31.53 lbs (14.3kg) ADT835PC-250
Environment	Operating temperature: 0°C~ 40°C Guaranteed accuracy: 13°C~ 33°C Storage temperature: -20°C~ 60°C Humidity: 5%RH~95%RH, non-condensing Altitude: ＜ 2000 m IP rating: IP20, indoor use only Vibration: 2g Impact: 5g Package drop test: 1m Warm-up time: 15 min
Working area	Bath size: 90mm*90mm Working area: bath center ϕ75mm circular zone, 15mm above bath bottom, 65mm below the fluid level, maximum depth 155mm
Heat transfer fluid	Maximum volume: 2.5L Recommended fluid at 150°C: DOW CORNING XIAMETER PMX-200 10cSt Recommended fluid at 250°C: DOW CORNING XIAMETER PMX-200 50cSt
Communication	USB-A, USB-B, LAN, WIFI, BLE
Electrical functions	Reference RTD channel (EXT.REF) ϕ4mm banana jacks, 6 PIN Lemo port, quick push wiring DUT channels (CH1, CH2) ϕ4mm banana jacks, quick push wiring
Display	6.5 in (165 mm) color capacitive touch screen, 640*480, anti-reflective panel, Dark or bright theme switchable Communication update rate: 10 times/s, Display refresh rate: 4 times/s Temperature units: °C, °F, K Highest resolution: 0.001°C, adjustable
Languages	English, Chinese, Japanese, Russian, German, French, Italian, and Spanish
Warranty	1 year

Temperature specification[1]		
Models	ADT835PC-150 / ADT835-150	ADT835PC-250 / ADT835-250
Range[2]	-30°C~150°C	33°C~250°C
INT REF accuracy[3]	± 0.1°C	± 0.1°C
EXT REF accuracy [4]	± 0.05°C	± 0.05°C
Stability[5]	± 0.01°C	± 0.015°C
Uniformity[6]	± 0.02°C	± 0.03°C (≤200°C) ± 0.04°C (＞ 200°C)
Repeatability[7]	0.04°C (internal reference) 0.01°C (external reference)	0.04°C (internal reference) 0.01°C (external reference)
Heating time[8]	18 min (-30~23°C) 30 min (23~150°C)	20 min (23~100°C) 35 min (100~250°C)
Cooling time[8]	45 min (150°C~23°C) 45 min (23°C~-25°C) 55 min (23°C~-30°C)	30 min (250°C~100°C) 45 min (100°C~33°C)
Typical time to stability [9]	10 min	10 min

Rev # 20250612

Additel
Metrology Made Simple

[1] The following temperature specifications are all based on the following conditions:
When the environmental temperature is between 13°C~33°C and the calibration bath is within one year after calibration, the confidence level is 95% (K=2), the bath is not open, the working area is the ϕ 75mm circular zone of the bath center, and it is 15mm above the bath bottom and 65mm below the fluid level. The depth of the fluid should be more than 130mm.
When the environmental temperature exceeds the range of 13°C~33°C, the stability and uniformity specification will be 1.25 times larger.
When the bath is open, the stability and uniformity specification will be 1.25 times larger.
[2] The lower limit of controlling range can vary depending on the environmental temperature.
[3] The internal reference accuracy has taken into account the followingl sources of error including calibration uncertainty, stability, uniformity and repeatability.
[4] The external reference accuracy is available for ADT835PC-150 and ADT835PC-250, the reference probe used is Accumac model AM1730-12-ADT.
[5] Stabilty is defined as half of the difference between the maximum and minimum temperature variations of the heat transfer fluid within the working zone over a 10-minute period after the product has reached full stabilization.
[6] Uniformity is defined as half of the difference between the highest temperature point and the lowest temperature point in the valid working area.
[7] Repeatability mainly considers the hysteresis and short-term stability of the reference sensor.
[8] Heating and cooling times are measured from the start of temperature control to when the setpoint is reached within the internal accuracy error band. Actual times may vary depending on ambient temperature, AC power supply voltage, sensor load, and whether the bath is covered during operation.
[9] The typical time to stability refers to the time taken for the temperature in the bath to reach the stability tolerance after the heating or cooling time ends.

Technical Specifications

Electrical specification		
Reference RTD channel (EXT. REF)	RTD measure	Range: (0~400)Ω Accuracy: ±1.25mΩ@(0~50)Ω, ±0.0025%RD@(50~400)Ω Resolution: 0.1mΩ Temperature coefficient: ±1ppmF.S/°C@(0~13)°C and (33~50)°C Excitation current: 0.75mA, current reversal Measurement technology: 4-wire, 1S measure cycle Type: Pt25, Pt100 SPRT Standard type: ITS-90, CVD, IEC-751 Wiring methods: Lemo and quick push connector
DUT channels (CH1, CH2)	Current measure	Range: (-30~30) mA Accuracy: ±(0.01%RD+2μA) Resolution: 0.1μA Temperature coefficient: ±5ppm F.S/°C@ (0~13)°C and (33~50)°C Input impedance: <10Ω
	Voltage measure	Range: (-30~30)V, (-12~12)V Accuracy: ±(0.01%RD+0.6mV) Resolution: 0.1mV Temperature coefficient: ±5ppmF.S/°C@ (0~13)°C and (33~50)°C Input impedance: >1MΩ
	Switch measure	Mechanical switch or electrical switch
	Loop power	24 V±10% (with Load), 24 V±1% (no Load), Max 60mA for supply power to temperature transmitter and electronic thermometer
	HART	CH1 supports measure and adjust HART transmitter
	RTD measure	Range: (0~400)Ω and (0~4000)Ω(auto) Accuracy: ±2.0mΩ@(0~25)Ω, ±0.004%RD@(25~400)Ω, ±0.005%RD@(400~4000)Ω (4-wire measure) Resolution: 0.1mΩ Temperature coefficient: ±2ppmF.S/°C@(0~13)°C and (33~50)°C Excitation current: 0.25mA, current reversal Measurement technology: 2/3/4-wire, 1S measure cycle RTD type: Pt10, Pt25, Pt50, Pt100, Pt200, Pt500, Pt1000, Cu10, Cu50, Cu100, Ni100, Ni120 Wiring methods: Lemo and quick push connector
	TC measure	Signal range: (-75~75)mV Accuracy: ±(0.01%RD+5μV) Temperature coefficient: ±5ppmF.S/°C @(0~13)°C and (33~50)°C TC type: S, R, B, K, N, E, J, T, C, D, G, L, U Cold junction range: 0°C~ 50°C Cold junction accuracy: ±0.2°C

Note: This specification reflects the bath's accuracy for up to one year following calibration, based on a confidence level of K=2

Rev # 20250612

Additel
Metrology Made Simple

Temperature sensor measurement specification									
Channel	**Type**	**Measurement Accuracy**							
Reference RTD channel (EXT.REF)	PT25	Temp. (°C)	-30	0	50	100	150	200	250
		Accuracy (°C)	±0.013	±0.013	±0.013	±0.013	±0.013	±0.014	±0.014
	PT100	Temp. (°C)	-30	0	50	100	150	200	250
		Accuracy (°C)	±0.006	±0.006	±0.008	±0.009	±0.011	±0.012	±0.013
DUT channels (CH1, CH2)	PT100	Temp.(°C)	-30	0	50	100	150	200	250
		Accuracy (°C)	±0.009	±0.010	±0.012	±0.015	±0.017	±0.019	±0.021
	K-TC	Temp. (°C)	-30	0	50	100	150	200	250
		Accuracy (°C)	±0.14	±0.13	±0.13	±0.13	±0.14	±0.15	±0.15
	N-TC	Temp. (°C)	-30	0	50	100	150	200	250
		Accuracy (°C)	±0.20	±0.19	±0.19	±0.18	±0.17	±0.17	±0.17
	E-TC	Temp. (°C)	-30	0	50	100	150	200	250
		Accuracy (°C)	±0.09	±0.09	±0.08	±0.08	±0.08	±0.09	±0.09
	J-TC	Temp. (°C)	-30	0	50	100	150	200	250
		Accuracy (°C)	±0.11	±0.10	±0.10	±0.10	±0.11	±0.11	±0.11
	T-TC	Temp. (°C)	-30	0	50	100	150	200	250
		Accuracy (°C)	±0.14	±0.13	±0.12	±0.12	±0.11	±0.11	±0.11

Note 1: The measurement accuracy specification does not include the accuracy of the DUT itself;
Note 2: Thermocouple measurement accuracy is calculated based on the cold junction temperature of 0°C and does not include the error of the CJC sensor.

ADT835 Selection Guide

Models	ADT835PC-150	ADT835-150	ADT835PC-250	ADT835-250
Range	-30°C~150°C	-30°C~150°C	33°C~250°C	33°C~250°C
mA/mV/V	●		●	
measure	●		●	
Switch measure	●		●	
24V loop power	●		●	
HART communicator	●		●	
Quick push wiring	●		●	
INT reference	●	●	●	●
EXT reference	●		●	
Self-calibration	●		●	
Documenting task	●		●	
Step test	●	●	●	●
Thermal calculator	●	●	●	●
Sensor library	●	●	●	●
Snapshot	●	●	●	●
Remote control	●	●	●	●
Smart diagnosis	●	●	●	●
USB stick update	●	●	●	●

Rev # 20250612

Additel
Metrology Made Simple

Ordering Information

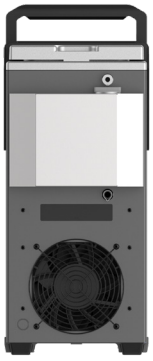
Model Number

ADT835 — 150 — 110 V

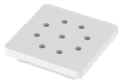
Model:
ADT835
ADT835PC

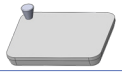
Temperature Range
(at 23°C):
150: -30°C to 150°C
250: -30°C to 250°C

Power Option:
110 V
220 V



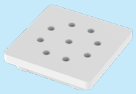
Accessories

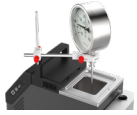
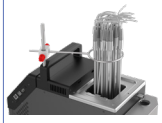
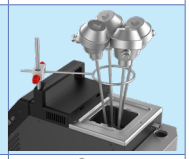
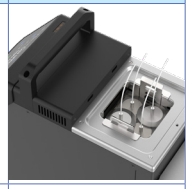
Standard Accessories		
Model	***Quantity***	***Picture***
AC power cable	1 pc.	
USB cable	1 pc.	
Test leads, 1 red 1 black (only ADT835PC-L-150/ ADT835PC-H-250)	1 pc.	
Top sealing cover	1 pc.	
Multiple hole Teflon cover	1 pc.	
Protection basket	1 pc	
Fluid overflow box	1 pc.	
ISO 17025 Accredited calibration	1 pc.	

Optional Accessories		
Model	***Description***	***Picture***
9921	Carrying case with wheels	
9090	Single clamp bracket (For more details, see ADT835 special jig specification)	
9091	Single circular bracket (For more details, see ADT835 special jig specification)	
9092	Adjustable multiple hole jig (For more details, see ADT835 special jig specification)	
AM17XX-12-ADT	Straight Secondary reference PRT (see Additel catalog)	
AM17XX-BEND-ADT	Bend Secondary reference PRT (see Additel catalog)	
9070	Smart connector for reference PRT (for modifying user's own reference sensor)	
9071	Connector Adapter from smart connector to 4-wire with gold-plated spades (for calibrating the reference sensor)	
9072	Smart connector with clamps for reference PRT (for connecting to user's own reference sensor)	
9203-4L	Silicon Oil, 4L (10 cSt for -150)	
9204-4L	Silicon Oil, 4L (50 cSt for -250)	
Blank access cover	Custom holes by users	
9080	Compensation cable kit (S, R, K, J, T, E, N)	

Rev # 20250612

Additel
Metrology Made Simple

ADT835 Special jigs			
No.	Name	Function	Picture
1	9090 Single clamp bracket	Quick connect to the M4 thread hose on the bath handle For clamp single DUT	
2	9091	Quick connect to the M4 thread hose on the bath handle Constrains multiple DUTs for batch calibration	
3	Protection basket	The mesh thermal protection basket is quickly installed in the tank. The sides and bottom of the basket have excellent temperature uniformity, and the DUTs can contact it at any place	
4	Adjustable multiple hole jig	Allows the flange, nut and stem of special-shaped DUTs to be immersed in the liquid at the appropriate position, and the height can be easily adjusted. Suitable for calibration of multiple sanitary temperature sensors	
5	Multiple hole Teflon cover	The PTFE cover provides heat insulation. The default is 9 * ϕ8mm holes, and the quantity and diameter of holes can be customized. Suitable for calibration of precision temperature sensors	

Typical Application of ADT835 Special jigs			
No.	Application	jigs	Picture
1	Open single calibration for 1 large dial bimetallic thermometer	Single clamp bracket	
2	Open batch calibration for 40 rod type sensors	Single circular bracket + Protection basket	
3	Open batch calibration for 4 temperature transmitters or more	Single circular bracket + Protection basket	
4	Open batch calibration for 4 sanitary sensors of 50 mm diameter	Adjustable multiple hole jig	
5	Closed precision calibration for 9 precision sensors	Multiple hole Teflon cover + Protection basket	

Note:
Open calibration is intended for batch calibration of low-precision temperature sensors, large dial low-precision sensors, or temperature transmitters.
Closed calibration is designed for precision temperature sensors or transmitters, featuring insulation to minimize heat loss.

Rev # 20250612