DATASHEET

TRU2-922

Isotech

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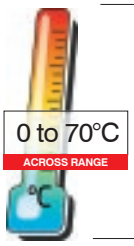

Thermocouple Reference Unit
TRU² Model 922

- Improves reference junction accuracy with a stable, externally controlled 0°C reference.
- Eliminates internal CJC errors by removing cold junction compensation from the instrument.
- Provides full traceability with optional UKAS ISO 17025 calibration of the unit and fitted double-junction thermocouples.

TRU² provides a stable, traceable 0°C reference for up to 100 thermocouple junctions. Moving the cold junction out of the instrument into a controlled isothermal block reduces uncertainty and improves measurement confidence. EMFs can be read using any precision DVM or temperature indicator with CJC disabled.

Based on the proven 937 TRU series, TRU² adds increased capacity, a removable well insert, and flexible connector options. The standard insert offers six 8mm pockets, with alternatives available. Optimised for 0°C as a clean, maintenance-free replacement for ice baths, TRU² can also operate between 45°C and 70°C for specialist applications.

Why Use an External Reference?

Internal CJC in thermometers and data loggers is often the largest source of error, typically 0.5°C to 1.0°C. TRU² provides a uniform, calibrated reference block with uncertainties typically better than ±0.1°C.

Key Benefits

- Low Uncertainty: Stable 0°C reference with ±0.03°C stability
- High Capacity: Up to 100 junctions in one unit
- Flexible connections: Base unit, 50-way, or 100-way configurations with screw terminals or optional miniature/full-size connectors.
- No Maintenance: Solid-state Peltier cooling replace ice baths, avoiding water management and contamination
- Traceability: Cold junction becomes a defined, calibrated part of the uncertainty budget

Understanding Double Junctions

TRU² is intended for use with double-junction thermocouples, standard practice in accredited labs and consistent with EURAMET cg-11 guidance.

Calibration & Verification

Supplied with calibration traceable to national standards. The reference temperature at 0°C is certified. Verification can be performed using a calibrated PRT positioned in the well.

Model	**TRU² 922**
Temperature Performance	
Operating Temp:	0°C (or 45°C to 70°C)
Stability at 0°C:	±0.03°C
Control:	Solid-state Peltier system
Well Configuration	
	Removable inserts
Standard insert:	Six 8mm × 195mm deep Alternative / custom inserts available
Connection Options	
TRU²:	Direct access to well

TRU² 50 and TRU² 100 are standard TRU² units fitted with additional front or front-and-rear panels to accommodate 50 or 100 thermocouple connections via connectors or screw terminals.

TRU² 50:	Up to 50 double junctions (front panel)
TRU² 100:	Up to 100 double junctions (front and rear panels)
General	
Alarm Facilities:	Non-latching relay rated 5 Amps 240V
PC Interface:	Serial
Power:	85–264 Vac, 50/60 Hz 100W typical
Dimensions:	Height - 338mm Width - 325mm Depth - TRU² / 150mm Depth - TRU² 50 / 215mm Depth - TRU² 100 / 280mm
Weight:	TBC
Accessories:	935-14-61 - Platinum Resistance Thermometer

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Applications

- National Metrology Institutes: Supports high-accuracy measurement and simulation-based calibration
- Accredited Laboratories: Stable, low-uncertainty cold junction for thermometer and instrument calibration
- Industrial Facilities: Consistent cold junction conditions for batch calibration and quality assurance
- Instrument Manufacturers: High-capacity reference for production testing
- R&D: Supports precision EMF measurement with microK and milliK systems

Principle of Operation

A Peltier-controlled isothermal block maintains a uniform reference temperature. Junctions are inserted into a removable aluminium well for consistent thermal contact. Stability at 0°C is ±0.03°C. Optional elevated-temperature operation is available from 45°C to 70°C.

Part of a Complete Isotech System

TRU² integrates with Isotech thermocouples, milliK and microK indicators, and calibration furnaces such as Pegasus, Saturn, and Model 547. Double-junction thermocouples and cold-junction probes are available with ISO 17025 calibration.

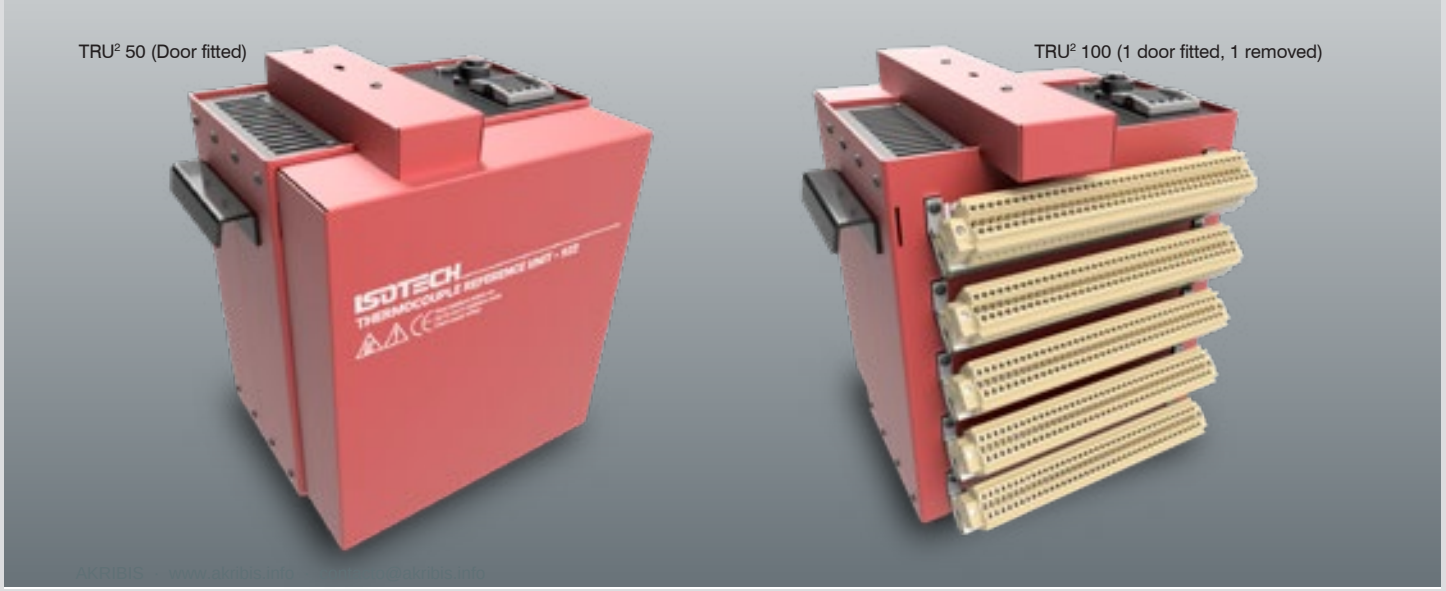
TRU² Benefits

Configurable Connectors to Suit Your Needs

Thermocouple connectors or screw terminals can be specified to match laboratory wiring practice. This allows direct termination without adapters or additional leads, reducing junctions and simplifying integration on benches or automated systems.

Interchangeable and Custom Well Inserts

The removable well system allows standard, alternative, or custom-drilled inserts to match exact probe dimensions. This avoids compromise, improves thermal contact, and supports legacy or specialised probe formats.

ISO 17025 Calibration of the Complete Reference System

UKAS ISO 17025 calibration can be supplied for the reference unit and fitted double-junction thermocouples, providing a fully traceable cold junction reference with documented uncertainty.