

Model TRX

719-8887



**UNOMAT
CALIBRATORS**

Perfection in featherweight

Multi-Calibrator for Process Instrumentation

Simulates and Reads Ohms, RTD's and thermocouples
Sources and Reads Millivolts, Volts and Milliamps
Powers and Reads 2-wire transmitters,
Simulates 2-wire transmitters



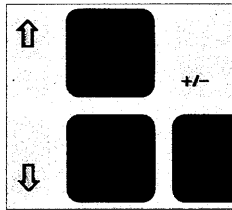
Druck A Druck Company

Keystroke function memory
Simultaneous input and output reading
Auto-stepping for hands free calibration
Tx Simulation at control system inputs

MODEL TRX, COMPACT AND THERMOCOUPLE

A True Field Calibrator

Designed to simulate and measure RTD's, Thermocouples and Resistors. It also sources and reads milliamps, millivolts and volts. To carry out fast calibrations, model TRX reads and powers temperature transmitters simultaneous with RTD or Thermocouple simulation. Tactile type membrane keys give you reliable feedback of all your keypad operations in any environment. The calibrator has a rugged industrial casing and raintight front panel components. A strong and handy carrying case protect the tester when stored in a toolbox and accommodates the test leads and instructions. Special straps allows the user to carry the tester in front with both hands free.



Easy to Operate

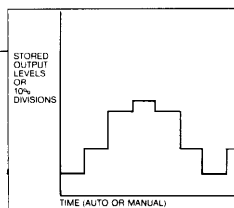
The model TRX has menu-driven operations for all functions. Simply press the up/down keys to scroll the menu ingredients and press "enter" to confirm your choice. Input and output data are displayed in a clear and logical manner. Operation and connection errors, like loop resistance mismatch and cold junction temperature sensor absence are monitored.

Keystroking

Keystroking eliminates time consuming keypad operations for functions you frequently use. One key stroke recalls every function you previously have stored, after you switch the calibrator on. Up to six functions can be stored and recalled.

Simulation and Outputs Signals

Source and simulation signals can be ramped up and down manually in two speeds. Temperature units are displayed in °C or °F; memorized

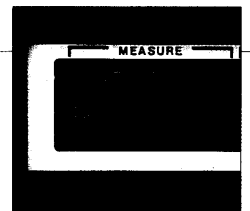


"switch-on" preference can be set by the user. Up to six output values for each type of signal can be temporarily stored and recalled manually or automatically (auto-stepping). Step timer setting is adjustable from 10 to 100 seconds.

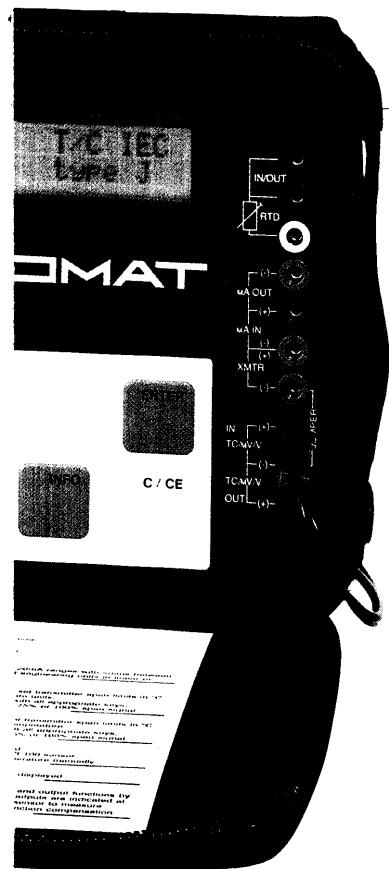
Temporarily stored data saved in the keystroke memory remain available for later use. Unit can also output fixed steps in 10% divisions of free selectable spans in both manual and auto-stepping mode.

Unique Features to Calibrate Temperature Transmitters

2-wire temperature transmitters can be connected in a closed calibration loop. Transmitters will be powered and read while receiving a simulated sensor signal. After converting transmitter output milliamps, both Tx output and input signals are simultaneous displayed in temperature units (°C or °F) for fast and easy comparison and calibration. In addition calibrator can output



TECHNOLOGY FOR RTD INSTRUMENTATION



RTD's and Thermocouple signals preset at 25% span divisions.

Milliamps Converted to Read Engineering Units

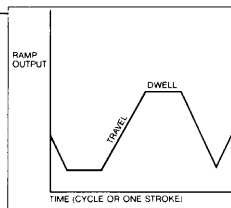
Transmitter output or simulation readings may be scaled into engineering units like psi, pascal, bar etc. The calibrator also reads and simulates dp-transmitters directly in square root converted flow units on 4-20mA and 0-20mA ranges.

Tx Simulation at Control System Inputs

Simulating non-linearized temperature transmitters (Tx) allows the user to check and calibrate 4-20mA system input hardware and software fast and easily. User can set or manipulate temperatures in °C or °F related to any available sensor and send the appropriate milliamps to the system input. Milliamps can be monitored simultaneously on calibrator display.

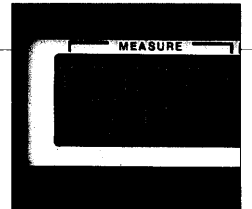
Output Ramp Function

Output or simulation signals are increased or decreased automatically proportional to time. Travel limits, travel time and dwelling time can be set in an easy manner. Alternate increase and decrease can be performed to simulate a process signal for dynamic testing of control loops. Ramp function is also useful to test valves and alarm levels.



The "Info Key"

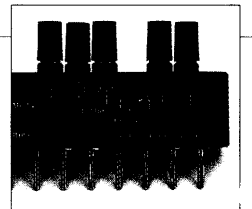
To ensure a clear and simple presentation of the readings, several settings, like for thermo couples, are not continuously displayed. Pressing the info-key shows what menu selection were made previously.



Accurate Cold Junction Compensation

Every calibrator on the market heats up even when dissipation is limited to a few Watts. Therefore instrument build-in sensors to compensate for cold junction emf's read too high a temperature (0,5°C or 1,0°F is not exceptional).

To avoid this undesirable effect, a Pt100 cold junction sensor has been accommodated in a separate terminal block. The terminal block also has rugged binding connectors to fix loose wire ends.



Extended Use on Alkaline Batteries

The TRX calibrator can operate for more than 20 hours from one set of alkaline batteries. Battery condition is precisely monitored indicating replacement priorities at two levels. User can easily change replacement levels into recharge levels when rechargeable NiCd batteries are preferred. For bench use the calibrator may be powered by using an optional AC line adaptor.

Service Friendly

A sound mechanical concept allows each circuit board replacement while comprehensive instructions for recalibration are part of the user guide. Last calibration date annunciation reminds the user to maintain quality assurance over longer periods of time. The TRX has been programmed to perform self diagnoses to annunciate any malfunction.

Function	Range	Resolution	1 year accuracy % of span	Remarks
Measure mVolts	0 - 120 mVDC	0.01mV	±0.025%	R - input > 20MΩ
Output mVolts	-10 - +120mVDC	0.01mV	±0.025%	R - output 0.2Ω
Measure Volts	0 - 120VDC	0.01V	±0.05%	R - input > 1MΩ
Output Volts	0 - 12VDC	0.001V	±0.025%	R - output 0.2Ω
Measure mA	0 - 52mA DC	0.01mA	±0.05%	R - input 10.5Ω fused
Output mA	0 - 24mA DC	0.01mA	±0.05%	R - max. 900Ω
Transmitter Sim.	0 - 24mA DC	0.01mA	±0.05%	V - max. ext. 56 Volts
Meas./Sim. Ohm	0 - 390Ω	0.1Ω	±0.1Ω	1.25mA excitation current for Ohm and, RTD measurement
Meas./Sim. Pt100	-200/850°C	-328/1562°F	0.1°C/ 0.1°F	±0.25°C/ 0.5°F
Meas./Sim. NI100	-60/250°C	-76/482°F	0.1°C/ 0.2°F	±0.25°C/ 0.5°F
Meas./Sim. NI120	-80/260°C	-112/500°F	0.1°C/ 0.2°F	±0.25°C/ 0.5°F
Meas./Sim. Cu10	-200/260°C	-328/500°F	2°C/ 4°F	±2°C/ 4°F
Meas./Sim. TC-J/L	-100/1190°C	-148/2174°F	0.2°C/ 0.4°F	±0.4°C/ 0.8°F
Meas./Sim. TC-J/L	-210/-100°C	-346/-148°F	0.4°C/ 0.8°F	±1°C/ 2°F
Meas./Sim. TC-K	-210/1370°C	-346/2498°F	0.2°C/ 0.4°F	±0.6°C/ 1.2°F
Meas./Sim. TC-K	-230/-210°C	-382/-346°F	1°C/ 2°F	±2°C/ 4°F
Meas./Sim. TC-T/U	-75/400°C	-103/752°F	0.2°C/ 0.4°F	±0.5°C/ 1°F
Meas./Sim. TC-T/U	-180/-75°C	-292/-103°F	0.4°C/ 0.8°F	±1°C/ 2°F
Meas./Sim. TC-T/U	-250/-180°C	-418/-292°F	0.6°C/ 1.2°F	±1.6°C/ 3.2°F
Meas./Sim. TC-B	540/1810°C	1004/3290°F	1°C/ 2°F	±2.5°C/ 5°F
Meas./Sim. TC-B	315/540°C	599/1004°F	2°C/ 4°F	±6°C/ 12°F
Meas./Sim. TC-B	180/315°C	356/599°F	4°C/ 7°F	±8°C/ 16°F
Meas./Sim. TC-R/S	100/1760°C	212/3200°F	0.7°C/ 1.4°F	±2°C/ 4°F
Meas./Sim. TC-R/S	-50/100°C	-58/212°F	2°C/ 4°F	±5°C/ 10°F
Meas./Sim. TC-E	0/1000°C	32/1832°F	0.1°C/ 0.2°F	±0.3°C/ 0.6°F
Meas./Sim. TC-E	-250/0°C	-418/32°F	0.8°C/ 1.6°F	±2°C/ 4°F
Meas./Sim. TC-N	-20/1300°C	-4/2372°F	0.2°C/ 0.4°F	±0.6°C/ 1.2°F
Meas./Sim. TC-N	-200/-20°C	-328/-4°F	1°C/ 2°F	±2°C/ 4°F

Notes: Ranges for thermocouple are in accordance with IEC 548-1 and DIN 43710 (U and L)
 Ranges for RTD's are in accordance with IEC 751 (Pt100), DIN 43760 (NI 100), JIS C 1604 (D-100, 392),
 Minco 7 (NI120), Minco 16-9 (Cu10).
 Thermocouple type N is Nicrosil/Nisil, Scale IPTS-68

Special functions

1. Fixed steps (2 to 6 programmable or fixed 10% divisions)
2. Signal ramping (up/dwell/down)
3. Scaling (engineering units)
4. Temperature Tx calibration
5. Temperature Tx simulation
6. Keystroking

Reference Calibration	22°C (71,6°F) ±1°C
Long term stability	Traceable to EEC standards with correlation to NIST
Indicated accuracies	±0,03% of range/year Specified for 15°C (60°F) to 35°C (95°F). Outside these limits: ±1lsd on zero and ±0,001% (0,0005%) of range/°C (°F)
Operating temperature	-10°C to +50°C (14°F to 122°F)
Storage temperature	-20°C to +70°C (-4°F to 158°F)
Warm up time	2 minutes in a constant ambient temperature
Relative humidity	0 to 90% non-condensing
Cold junction compensation (automatic at 0°C/32°F)	±0,25°C (0,5°F) with the Pt100 sensor in the Terminal Block or ±0,8°C (1,4°F) with a RTD sensor in the TRX housing or manually by the user within -99°C/°F en 99°C/°F
Excitation current, RTD sim.	5mA max., either polarity (from an external source)
Read-out	4 1/2 or 4 digits, depends on the selected function. Text in English
Batteries	4 x 1,5 Volts, type LR14 (Baby or Size C)
Battery life	25 hours with alkaline batteries 20°C (68°F), 8 hours with 20mA load, 11 hours with NiCd at 20°C (68°F) 8 hours with 20mA load
Low battery indication	Pre-warning alternately flashes "poor battery condition". After load approx. 15 minutes unit stops working, annunciating "replace (charge) batteries".
External power supply	2,5mm plug, 6 Volts at 300mA (1000mA peak)
Connections	Suitable for 2mm test plugs or loose wire ends (with terminal block)
Protection	IP53
Housing	Textured high-impact ABS plastic
Size	200 x 117 x 32mm (8,0" x 4,7" x 1,3") without carrying case
Weight	0,9kg (2 pounds) including batteries, carrying case and testleads

Specifications subject to change without notice.

ORDERING INFORMATION:

Model TRX (includes carrying case, set of batteries, instruction guide, spare fuse, terminal block, testleads).
 Optional line adaptor: 230V/50Hz. Part No. 13603, 115V/60Hz Part No. 13604.

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