



ACE INSTRUMENTATION

Calibration Instruments

Patent no.
305295

- **Field Portable
or Bench**
- **Large well capacity
(50 mm / 2")**
- **Range -40°C below
amb. to +150°C**
- **Resolution 0,01°C**
- **Stability $\leq \pm 0,005^\circ\text{C}$**
- **Full graphic display,
1/4 VGA**
- **RS232 interface**
- **Upgrade via Internet
and RS232**



TC2000 – the complete concept in Temperature Calibration



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Tek Know **TC2000** the most complete temperature calibrator system ever built

Scan-Sense has patented a system which combines dry block well with a liquid bath.
By changing the insert the TC2000 is transformed from a dry block to a bath.
With TC2000's unique flexibility one can combine the best features of a dryblock well with a liquid bath on the same calibrator.
The TC2000 has a built-in computer that enables you to easily set-up an automatic multi-point calibration system.

The patented "All-in-one solution"

Dry block calibrator advantages:

- Portable
- No liquid or mess
- Large temperature range
- Quick change in well temperature
- Good stability

External reference advantages:

- Comparison method is the correct way of performing a calibration
- Possible to work in true temperature by using correction tables for external references

Automatic calibration system advantages:

- Fully automatic calibration
- Easy to set-up
- Input and signal conditioning for external reference sensor (PRT)
- RTD, T/C, V and mA inputs
- Graphical display/screen
- Calibration values logged
- Produces calibration reports to ISO9000

Liquid bath advantages:

- Excellent stability and accuracy
- Excellent repeatability
- Better capacity to accommodate different sizes and shapes of sensors
- No need to make fittings for sensors
- Small temperature gradients
- Large capacity

TC2000 has it all

- ✓ Full graphic display, 114 VGA
- ✓ Internal reference sensor
- ✓ Input for external reference

- ✓ 24VDC power supply for transmitters
- ✓ Correction tables for external references
- ✓ Signal inputs for sensors under test; RTD, T/C, V and mA

- ✓ Uses Windows® CE operating system
- ✓ Calibration reports directly to printer
- ✓ Calibration set-up from numeric keyboard or softkeys

- ✓ 20 calibration points can be set for automatic calibration
- ✓ Integrated case, open the lid and TC2000 is ready for use



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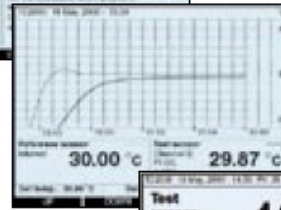
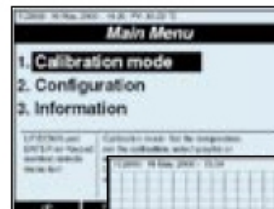
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Easy-to-use graphical LCD display with guiding menus



Main menu - Calibration mode

- Calibration set-up from numeric keyboard or softkeys
- Graphical or Numerical display for internal or external ref. sensor and sensor under test
- Switch test indication
- When using TC2000 as a stirred liquid bath, you may set an appropriate impeller speed from the software

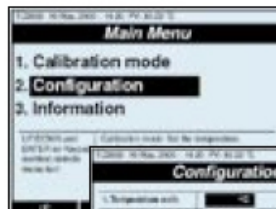


Test sensor	40.23 °C
Reference sensor	37.23 °C
Test temperature	30.00 °C
Switch test	Open
Impeller	OFF

Main menu - Configuration

In this mode following set-ups are made:

- Temperature units in °C, °F and °K
- Ref. sensor internal or external
- Ext. ref. sensor correction table
- Sensor under test: TIC, Pt100 mA, V or other
- The TC2000 Helper guides you through all Configurations
- 10 calibration profiles can be stored



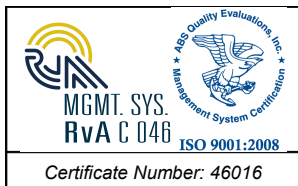
1. Temperature units	°C	°F	°K
2. Reference sensor	Internal	Probe	
3. Sensor correction	None	Table	
4. Test sensor	Other	Probe	4-20mA
5. Report temp	Yes	No	

Read value	True value	LP10000, and LP100000
0.00	0.00	0.0000
0.10	0.10	0.0000
0.20	0.20	0.0000
0.30	0.30	0.0000
0.40	0.40	0.0000
0.50	0.50	0.0000
0.60	0.60	0.0000
0.70	0.70	0.0000
0.80	0.80	0.0000
0.90	0.90	0.0000
1.00	1.00	0.0000

mA	°C
4.00	10.00
20.00	100.00

Main menu - Information

In this mode you will get all necessary information about the calibrator.



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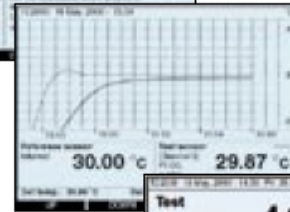
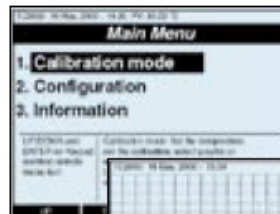
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Easy-to-use graphical LCD display with guiding menus



Main menu - Calibration mode

- Calibration set-up from numeric keyboard or softkeys
- Graphical or Numerical display for internal or external ref. sensor and sensor under test
- Switch test indication
- When using TC2000 as a stirred liquid bath, you may set an appropriate impeller speed from the software

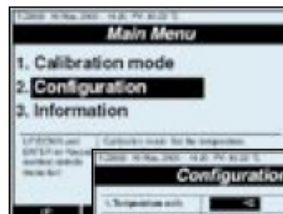


Test sensor	40.23 °C
Reference sensor	37.23 °C
Set temperature	30.00 °C
Stirrer test	Open
Impeller	OFF

Main menu - Configuration

In this mode following set-ups are made:

- Temperature units in °C, °F and °K
- Ref. sensor internal or external
- Ext. ref. sensor correction table
- Sensor under test: T/C, Pt100 mA, V or other
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Configuration	
1. Temperature units	°C °F °K
2. Reference sensor	Internal Probe
3. External correction	None Table
4. Test output	mA mV 0-5VDC
5. Record temp.	Yes No

Correction table	
Real value	True value
0	0.00
1	0.10
2	0.20
3	0.30
4	0.40
5	0.50
6	0.60
7	0.70
8	0.80
9	0.90
10	1.00

4-20 mA Configuration	
mA	°C
4.00	10.00
20.00	100.00

Main menu - Information

In this mode you will get all necessary information about the calibrator.



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Technical information

Temperature range	-40°C* to +150°C
Accuracy	± 0.3°C
Resolution	0.01°C
Gradients at 95°C w/water	
between bottom and 25mm from top	0.06°C
Stability (30 min. after normal stabilisation):	
As a dry block	± 0.02°C
As a stirred liquid bath	± 0.005°C
As a stirred ice bath	± 0.001°C
Well depth	155mm
Well dia.	50mm
Bath Chamber Dimensions	26 l cm ³
Thermostat test	yes

* Rel. ambient

Electrical specifications

Input Port A:	Range	Res.	Σ Accuracy:	
Pt100 2, 3 and 4-wire*	-50 to 800°C	0.01°C	Accuracy ± 0.05°C	+ (% of reading) ± 0.009%
Inputs Port B:				
Pt100 2, 3 and 4-wire*	-50 to 800°C	0.01°C	± 0.05°C	± 0.009%
Type K	-100 to 1370°C	0.1°C	± 0.25°C	± 0.03%
Type J	-200 to 1200°C	0.1°C	± 0.25°C	± 0.03%
Type E	-200 to 1000°C	0.1°C	± 0.25°C	± 0.04%
Type T	-200 to 400°C	0.1°C	± 0.25°C	± 0.03%
Type S	0 to 1760°C	0.1°C	± 0.25°C	± 0.03%
Type R	0 to 1760°C	0.1°C	± 0.25°C	± 0.03%
Type B	+400 to 1820°C	0.1°C	± 0.25°C	± 0.03%
Type N	-200 to 1300°C	0.1°C	± 0.25°C	± 0.05%
Voltage **	0 to 10V	1µV	± 2µV	± 0.02%
Current**	0 to 22mA	1µA	± 2µA	± 0.02%
Cold junction***	0 to 40°C	0.1°C		± 0.25%

* Pt100 conforms to IEC751 and temperature scaling of ITS-90

** All thermocouple inputs are cold junction compensated

*** Will in addition indicate negative inputs but these are not calibrated

T/C input temperature drift:	±0.009% /°C or 90 ppm/°C
V and mA input temperature drift:	±0.0027% /°C or 27 ppm /°C



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