

Features

- Choose from three models covering temperatures from -40°C to 650°C.
- Two versions - the basic 'S' and microprocessor based 'H' version.
- High accuracy and stability.
- Large interchangeable multiple-drilled insert.
- Unique temperature zone - with improved uniformity and control stability.
- Rapid heat-up and cool-down times.
- Calsoft calibration software supplied as standard with the 'H' versions and as an optional extra with the 'S' versions.
- RS232 interface for data and programme transfer, or real-time control.
- Fast settling time for rapid testing.

'H' versions only

- Software supplied as standard.
- 4 line 20 character LCD, 8 button keypad for entering programmes and viewing data.
- Ability to create/use/store programmes and test results internally.
- Programming of set temperature, ramp rate, hold time, 'pause on switch changeover' operation and hold until pause pressed.
- Switch test input for monitoring temperature thermostats.
- Calibration using the User Probe Interface which allows storage of the block temperature and the reading of the test sensor

Tempcal®

Dry Block

TEMPERATURE
CALIBRATORS



Tempcal® Junior

Features

- Low cost option
- Hand-held
- Large block in 6 formats
- Maximum temperature 350°C
- Independent over temperature cut-out
- Temperature sensor burnout protection

- Separate heater on/off switch for fast cool down without changing set temperature
- Indicators for over temperature cut-out and heater power
- Switchable °C/°F



Haven Automation Limited

Tempcal®



Designed to provide a stable and accurate environment for the calibration of temperature sensors including liquid-in-glass and dial thermometers, thermocouples, RTD's, thermal switches, transmitters and fluid filled bulbs, the Tempcal® range of Block Calibrators comes in two different formats and three temperature ranges.

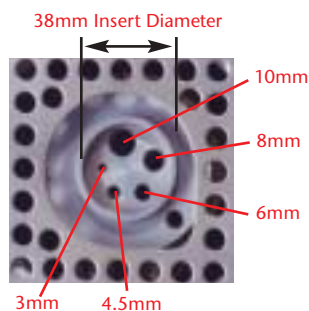
Model	Min Temp°C	Max Temp°C	°C/°F Display	Programme Storage	Switch Test Input	Software
Tempcal® 140S	amb-45	140	▼	-	-	Optional
Tempcal® 140H	amb-45	140	▼	▼	▼	▼
Tempcal® 425S	amb+20	425	▼	-	-	Optional
Tempcal® 425H	amb+20	425	▼	▼	▼	▼
Tempcal® 650S	amb+25	650	▼	-	-	Optional
Tempcal® 650H	amb+25	650	▼	▼	▼	▼

N.B: Tempcal 140 - using an external 4°C chilled water supply connected to the integral cooling coil an actual temperature of -40°C can be achieved.

One Insert for Multiple Probes

The insert blocks on the Tempcal® units have the advantage of a 38mm diameter to enable multiple probes of varying sizes to be tested at one time, making the units both economical and extremely flexible.

The example shown is insert AB102M with five drilled holes from 3mm to 10mm diameter. Please contact our Sales Office if your requirement is outside our standard range.



Tempcal Software 'Calsoft'

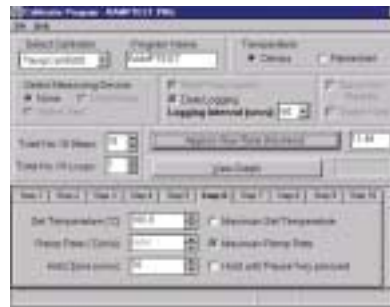
FOR BOTH H AND S MODELS, CALSOFT ENABLES YOU TO:

- Create, open, save and print programmes
- Log data from the calibrator while connected to the computer
- Open, save, view and print logged data
- Run a programme in real time mode

N.B: The 'S' range of Tempcal calibrators must be connected to the computer at all times in order to run the programmes set up by CalSoft.

FOR H MODELS ONLY, CALSOFT ENABLES YOU TO:

- Select 3 possible options to carry out a calibration
- Perform a calibration where you input the temperature of the probe manually
- Perform a calibration using the User Probe Interface - see optional accessories
- Perform a calibration requiring a switch test
- Send programmes to the calibrator
- Retrieve programmes from the calibrator
- Retrieve test results from the calibrator
- Erase test results



Shows step 6 of a 10 step programme for a Tempcal® 650S. Step 6 has a set temperature of 100°C, a maximum ramp rate and a hold time of 10 minutes.

Shows above programme running in real time mode. Programme is currently running step 1 of the 10 step programme, with data being logged and graphed at 60 second intervals.



Shows a visual representation of a 10 step programme for a Tempcal® 650S.



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Specifications

	TEMPCAL® 140S/H	TEMPCAL® 425S/H	TEMPCAL® 650S/H	TEMPCAL® JUNIOR
Temperature Range °C	amb-45 to 140*	amb+20 to 425	amb+25 to 650	amb+20 TO 350
Working Ambient °C	10 to 30	10 to 30	10 to 30	10 TO 30
Measuring Zone (M.Z.)	0-50mm from base of well	0-50mm from base of well	0-50mm from base of well	-
Typical Accuracy °C	±0.3 in M.Z.	±0.3 in M.Z.	±0.4 in M.Z.	±1.0 (100-300°C)
Uniformity °C (in M.Z.)	±0.2 at 100	±0.2 at 300	±1 at 400	-
Immersion Depth	114.3mm	114.3mm	152.4mm	-
Stability	±0.05°C after 10 mins	±0.05°C after 10 mins	±0.09°C after 10 mins	±0.10°C @ 100°C ±0.15°C @ 200°C
Display Resolution °C or °F	0.1	0.1	0.1	0.1
Heating Rate	20°C to 100°C - 5 mins	20°C to 400°C - 15 mins	20°C to 600°C - 35 mins	20°C to 300°C - 5.2 mins (230V only)
Cooling Rate	100°C to 0°C - 9 mins	400°C to 100°C - 25mins	600°C to 200°C - 30 mins	300°C to 100°C - 10.8 mins
Fan Cooling	N/A	Automatic	Automatic	Automatic
Programmable Ramp				
Rate °C/Min	0.1 to 10 on H Version	0.1 to 10 on H Version	0.1 to 10 on H Version	-
Switch Test	on H Version	on H Version	on H Version	-
Weight, Kg	14.0kg (S) 14.4kg (H)	9.2kg (S) 9.6kg (H)	11.8kg (S) 12.2kg (H)	1.5kg
Dimensions H x W x D	285 x 190 x 426mm	285 x 190 x 426mm	285 x 190 x 426mm	72 x 128 x 178mm (excluding handle)
Voltage	230V or 120V	230V or 120V	230V or 120V	230V or 120V
Hz	50/60	50/60	50/60	50/60
Watts	400	700	1100	460

* The minimum temperature achievable can be reduced when used in conjunction with the CH-5 Chiller Unit - see optional accessories

Tempcal® Interchangeable Insert Blocks

Description	Order Code Tempcal 140 and 425 (aluminium)	Order Code Tempcal 650 (aluminium bronze)
5 x 6mm	AB101M	BB101M
1 x 10, 8, 6, 4.5, 3mm	AB102M	BB102M
2 x 6mm and 2 x 10mm	AB103M	BB103M
2 x 6mm and 2 x 12mm	AB104M	BB104M
1 x 6mm	AB105M	BB105M
5 x 1/4"	AB106I	BB106I
3/8", 5/16", 1/4", 3/16", 1/8"	AB107I	BB107I
2 x 3/8" and 2 x 1/4"	AB108I	BB108I
2 x 1/2" and 2 x 1/4"	AB109I	BB109I
1 x 1/4"	AB110I	BB110I
Blank	AB111	BB111
1 x 9/16"	AB112I	BB112I
1 x 5/8"	AB113I	BB113I
1 x 11/16"	AB114I	BB114I
1 x 3/4"	AB115I	BB115I
20mm	AB116M	BB116M
1 x 4, 5, 9, 11mm	AB117M	
1 x 6mm (immersion depth 40mm)	AB118M	
1 x 6mm and 1 x 9mm	AB119M	
9 x 3.18mm	AB120M	
1 x 19.5mm		BB121M
1 x 10, 8, 6, 4, 3mm		BB122M
1 x 12mm		BB123M
1 x 15mm		BB124M

Supplied with a soft carry case with adjustable shoulder strap, removable mains lead, user manual and insert extractor tool.* In addition 'H' units are supplied with Calsoft Software and 1.5 metre RS232 lead.

*Please state when ordering whether you require a 120V or 230V model.

Tempcal Junior

Unit Block Options

Block Type	Description
A	4 x 6mm
B	1 x 10, 8, 6, 4.5, 3mm
C	2 x 6mm, 2 x 10mm
D	4 x 1/4"
E	1 x 3/8", 5/16", 3/16", 1/8"
F	2 x 1/4", 2 x 3/8"

N.B: The block on the Tempcal® Junior is fixed and cannot be removed.

Supplied with removable mains lead and user manual.*



Optional Accessories

CH-5 Chiller Unit

The CH-5 Chiller Unit is designed for use in conjunction with the Tempcal 140 calibrators to achieve calibration temperature down to -40°C. The minimum temperature achievable on the Tempcal 140 models is 45°C below ambient, but by artificially cooling the heatsink of the units with water from the Chiller an actual temperature of -40°C can be achieved. The unit is designed to run on distilled or deionised water.



Working Temperature Range	4-15°C
Cooling Capacity	400 watts
Temperature Control	Thermostat on/off
Electrical Control	Manual
Dimensions LxWxH (inc. pump)	430 x 235 x 524mm
Bath Capacity	5 litres
Pump Capacity	20 litres/min

Cooling Probe

A cooling probe is available for use with the Tempcal 425 and 650. It can be used to rapidly cool the block and to operate the unit around ambient temperature. The cooling probe must be inserted into a 10mm diameter or larger hole in the insert block.



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User Probe Interface

- Enables fully automated and unattended calibration of temperature sensors
- For use on 'H' versions only

The User Probe Interface accepts K, J, N, T and E thermocouple types and 100 and 1000 ohm 3 and 4 wire RTD's. The UPI can also be connected in series with a 0-20 mA loop and the current reading of the transmitter displayed.

Simply install your sensor into the insert block and connect the wiring to the appropriate front panel terminals, switch the UPI on and select your sensor type. Create or run a programme either using the Calsoft Software or the Tempcal Calibrator memory and the Calibrator will save all the data throughout the run.

When finished, data can be output as text, as a graph or a calibration certificate can be created for the sensor under test.



The UPI is powered by a standard 9V battery. Sensor wires are connected to standard 4mm banana jacks.

Probe Type	Resolution	Accuracy	Range
K t/c	0.1°C	0.3°C	-50 to 300°C
		±0.15% ±0.2%	301 to 530°C 531 to 650°C
J t/c	0.1°C	0.3°C	-50 to 300°C
		±0.15% ±0.2%	301 to 530°C 531 to 650°C
N t/c	0.1°C	0.3°C	-50 to 300°C
		±0.15% ±0.2%	301 to 530°C 531 to 650°C
T t/c	0.1°C	0.3°C	-50 to 300°C
		±0.15% ±0.2%	301 to 400°C 401 to 530°C
E t/c	0.1°C	0.3°C	-40 to 300°C
		±0.15% ±0.2%	301 to 530°C 531 to 650°C
100 ^Ω RTD	0.1°C	0.2°C ±0.1%	-50 to 200°C 201 to 650°C
1000 ^Ω RTD	0.1°C	0.2°C ±0.1%	-50 to 200°C 201 to 650°C
mA	0.1µA	±0.002mA	0 to 10mA
		±0.2%	10.1 to 20.0mA

Ordering information

Optional Accessory	For Instrument Type	Order Code
Chiller Unit	Tempcal 140S/H	CH-5
Cooling Probe	Tempcal 425S/H, 650S/H	FG-134
User Probe Interface	Tempcal 140H, 425H, 650H	FG-136
Calsoft Software only	Tempcal 140S, 425S, 650S	FG-132
Calsoft Software and RS232 Cable	Tempcal 140S, 425S, 650S	FG-133
Hard Carry Case	Tempcal 140S/H, 425S/H, 650S/H	FG-137
Soft Carry Case	Tempcal Junior	FG-154
UKAS Calibration Certificate	All Models	On request

Authorised Representative:

