

SCIGICAL-5 Manual



1295 Morningside Avenue, Unit 16-18
Scarborough, ON M1B 4Z4 Canada
Phone: 416-261-4865 Fax: 416-261-7879
www.scigiene.com

The SCIGICAL-5 finally allows for fast and precision calibrations of over 10+ thermometers over the range of 0°C to 95°C with an accuracy of $\pm 0.1^\circ\text{C}$ at 0°C. The SCIGICAL-5 includes the Scigical 5 Calibrator with A thermometer /probe tests plate and a certified RD0370R reference thermometer. This unit is ideal for multipoint calibrations between 0°C and 95°C. For calibrations outside these ranges please call us directly and we can go over the various options to help you.

Many labs are using the process of stirring a cup or beaker with crushed ice and water to do calibrations or temperature validations. While this might work occasionally, it also just as frequently does not. The reasons for this are quite simple:

- Distilled water stirred well with 50% ice gives 0°C at sea level. However, if you change altitude or have impurities in the water, the ice point changes.
- If the probe tips are in contact with the ice and not just the water, they may be reading the ice temperature or an average of both. Ice from your freezer is well below 0°C.
- The probes themselves may have varying response times of 5 to 30 seconds depending on design. If the temperature is not 100% stable, they may not read the same, but still be accurate. It is critical when doing calibration to have a stable temperature bath.
- If the probes are in contact with the container wall ($>0^\circ\text{C}$) this will also throw the temperature out.
- Using a calibration bath that is stable in temperature is not easy without the correct equipment. Ice baths can have a variance of up to $\pm 2.0^\circ\text{C}$. So why has the ice bath method been so universally adopted? At one time we all used dial thermometers. These have a stated accuracy of roughly $\pm 2.0^\circ\text{C}$, and using the standard crushed ice method and following exact procedures you were able to verify and calibrate them. But industry standards have risen and most companies have written into their HACCP/BRC/ISO plans the need to use and calibrate to 0.5°C or better.
- A fact is that most digital pocket thermometers are not even that accurate and if you press the CAL feature in an ice bath that is not precise you can end up DE calibrating them. Can it be done? Yes, but the procedure using standard stirrers and beakers and clamps is painstaking and error prone is an understatement. At Scigiene we have studied this extensively and developed the Scigiene Calibrator that allows simplified, repeatable and accurate calibrations.

The SCIGICAL-5 controls all these factors and therefore offers precision calibrations to more than $\pm 0.1^\circ\text{C}$



1295 Morningside Avenue, Unit 16-18
Scarborough, ON M1B 4Z4 Canada
Phone: 416-261-4865 Fax: 416-261-7879
www.scigiene.com

Procedures:

For 0°C to ~25°C

- 1) At least 1L of crushed ice ▪ 1L Cold Water ▪ Salt
- 2) Plug in and turn on Scigical 5 calibrator. Make sure stir bar and rack are in place. 1/2 fill with ice (Cubed preferable) and add cold water to fill line.
- 3) Turn on Calibrator (switch at back)
- 4) Using Menu button toggle display to temperature. Using UP/Down arrows adjust temperature to chosen setting (for 0°C select-----)
- 5) Toggle MENU to time and set time using up/down arrows
- 6) Toggle Menu to Speed and adjust using up/down arrows
- 7) Press start and insert Reference probe into depth adjustment fitting on the lid (can be finger tightened). Do not let it drop to interfere with the stir bar in the bath. Wait for bath to stabilize at desired temperature.
- 8) If 0°C is desired you might need to add small amounts of salt. Begin to slowly add salt until the reference thermometer reads 0.0°C.
- 9) Insert thermometers to be calibrated into the holes in the calibrator lid and leave to stabilize 30 seconds. Do not let them touch the bottom of the bath. Check temperature and if thermometers have CAL button press to recalibrate to read precisely 0°C.
- 10) At higher temperatures record test thermometer and record difference on your audit records.

For temperature above ambient

- 1) Fill bath to fill line with water.
- 2) Plug in and turn on Scigical 5 calibrator. Make sure stir bar and rack are in place.
- 3) Turn on Calibrator (switch at back)
- 4) Using Menu button toggle display to temperature. Using UP/Down arrows adjust temperature to chosen setting.
- 5) Toggle MENU to time and set time using up/down arrows
- 6) Toggle Menu to Speed and adjust using up/down arrows
- 7) Press start and insert Reference probe into depth adjustment fitting on the lid (can be finger tightened). Do not let it drop to interfere with the stir bar in the bath. Wait for bath to stabilize at desired temperature.
- 8) Insert thermometers to be calibrated into the holes in the calibrator lid and leave to stabilize 30 seconds. Do not let them touch the bottom of the bath. Check temperature.
- 9) At higher temperatures record test thermometers and record difference on your audit records. Suggestion: do not use 100°C. a) boiling is usually below 100°C at altitudes above sea level. And the boiling bubble can cause erratic reading on the probes. Also, for pocket thermometers without temperature compensation the steam may cause electronic deviation and the steam may result in users getting scalded. Better to do checks at 90-95°C.

If you do want to go to 100°C + contact Scigiene as we can modify this unit for higher temperatures.



1295 Morningside Avenue, Unit 16-18
Scarborough, ON M1B 4Z4 Canada
Phone: 416-261-4865 Fax: 416-261-7879
www.scigiene.com