REALLY COLD BATHS

Really Cold Baths	Models 7060, 7061, 7080, and 7081
Self-contained refrigeration—no LN_2 or chiller required	
Best stability and uniformity available at –60°C and below	
Large working areas for increased throughput	

Do you need a bath that chills below –40°C to temperatures as low as –60°C or –80°C? Would you like a bath that reaches those temperatures without using any external coolants? Hart has a variety of baths that meet these temperature requirements and give you the best stability in the industry. (See page 108 for the Model 7100 that reaches –100°C.)

These baths are completely self-contained. They require no auxiliary cooling fluids or devices to achieve their set-point temperatures. Stability at –80°C is ±0.0025°C. No other company makes a bath that can match a Hart bath's performance, and Hart baths are backed by our guarantee that if they don't perform exactly the way we say they will, we'll take them back. No arguments. No ifs, ands, or buts. These baths work—period!

Automate each of these baths with an interface package and Hart's 9930 Interface-*it* software. If you want to completely automate the entire calibration process, see the description of Hart's Calibrate-*it* package on page 80.

Forget commodity-like utility baths! They're not designed for high performance calibration needs. And be careful of companies that advertise performance specifications they don't meet. It's easy to write down numbers; it's more difficult to meet them with an instrument.

Remember, if our baths don't perform the way we say they will, just send them back. Our equipment won't disappoint you.

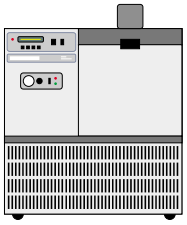
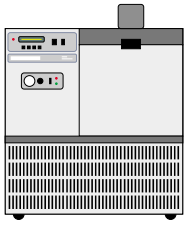
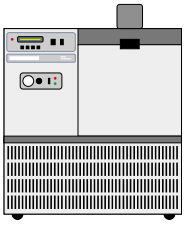
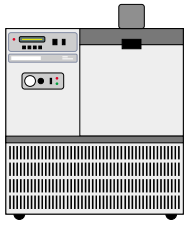
Ordering Information

7060	Bath
7061	Bath
7080	Bath
7081	Bath
2001-7060	Automation Package for 7060
2001-7061	Automation Package for 7061
2001-7080	Automation Package for 7080
2001-7081	Automation Package for 7081
2001-IEEE	Add for IEEE-488 (requires Automation Package)
2010	Access Cover, 5" x 10", Lexan
2007	Access Cover, 5" x 10", Stainless Steel
2011	Access Cover, 7.25" x 12.75", Lexan
2009	Access Cover, 7.25" x 12.75", Stainless Steel
2030	Fast Start Cooler

Call for –100°C baths.

See our selection of bath fluids on page 110.

See page 109 for computer interface information and page 78 for calibration software packages.

Specifications	7060	7061	7080	7081
				
Range	–60°C to 110°C		–80°C to 110°C	
Stability	±0.0025°C at –60°C (methanol) ±0.002°C at 0°C (methanol) ±0.0015°C at 25°C (water) ±0.003°C at 100°C (oil)		±0.0025°C at –80°C (methanol) ±0.0015°C at 0°C (methanol) ±0.0015°C at 25°C (water) ±0.003°C at 100°C (oil)	
Uniformity	±0.005°C at –60°C (methanol) ±0.005°C at 0°C (methanol) ±0.003°C at 25°C (water) ±0.005°C at 100°C (oil)		±0.007°C at –80°C (methanol) ±0.005°C at 0°C (methanol) ±0.003°C at 25°C (water) ±0.005°C at 100°C (oil)	
Temperature Setting	Digital display with push-button data entry			
Set-Point Resolution	0.01°C; high-resolution mode, 0.00007°C			
Display Resolution	0.01°C			
Digital Setting Accuracy	±1°C			
Digital Setting Repeatability	±0.01°C			
Heaters	500 and 1000 Watts			
Access Opening (call for custom sizes)	5" x 10" (127 x 254 mm)	7.25" x 12.75" (184 x 324 mm)	5" x 10" (127 x 254 mm)	7.25" x 12.75" (184 x 324 mm)
Depth	12" (305 mm)	13.25" (337 mm)	12" (305 mm)	13.25" (337 mm)
Wetted Parts	304 stainless steel			
Power	230 VAC (±10%), 50 or 60 Hz, 13 A, single phase, 2900 W, specify frequency			
Volume	7.2 gallons (27 liters)	11.2 gallons (42 liters)	7.2 gallons (27 liters)	11.2 gallons (42 liters)
Weight	350 lb. (159 kg)			
Size	46" H x 30.5" W x 19" D (1168 x 775 x 483 mm)			
Automation Package	Interface-*it* software and an RS-232 computer interface are available for setting the bath temperature via an external computer. For IEEE-488, add 2001-IEEE to the automation package.			

Technical Tip

Uncertainty Evaluation and SPC with a Bath

Considerable emphasis is placed on uncertainty analysis and statistical process control (SPC) in the calibration lab. If you are using a calibration bath in your process, you may be wondering how to include the bath in the process evaluation. Basically, there are three approaches.

The first is to "calibrate" the bath to ensure that it meets published specifications and include the published specifications with the "type B" uncertainties in your evaluation just as you might do with any other instrument.

The second approach is to thoroughly test the bath stability and uniformity, perform statistical analysis of the results' uncertainties, and include the results with the "type A" uncertainties in your evaluation. This is often a better method and will provide more realistic results.

The third avenue is to use a "check standard" instrument in the process in such a way that the bath characteristics are included in the check-standard data, which is evaluated statistically and included with the "type A" evaluation. This approach is somewhat more time-consuming but will provide realistic results. When used in conjunction with the second method above, the best results will be obtained.