REALLY COLD BATHS

CalPower
Via Acquanera, 29 22100 COMO
tel. 031.526.566 (r.a.) fax 031.507.984
info@calpower.it www.calpower.it

Really Cold Baths **Models 7060, 7080, and 7100**

- Self-contained refrigeration — no LN_2 or chiller required
- Temperatures as low as –100°C in real metrology baths
- 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 even –100°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.

These baths are completely self-contained. They require no auxiliary cooling fluids or devices to achieve their set-point temperatures. Using Hart's unique "heat-port" design, stability at –100°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 MET/TEMP II software package on page 75.

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.

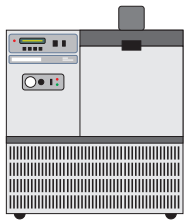
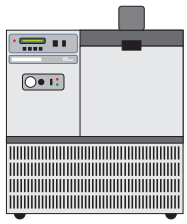
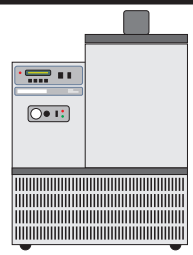
Remember, if our baths don't perform the way we say they will, just send them back. Our equipment won't disappoint you.

Ordering Information

7060	Standard Bath, –60°C to 110°C
7080	Standard Bath, –80°C to 110°C
7100	Standard Bath, –100°C to 110°C
2001-7060	Automation Package for 7060
2001-7080	Automation Package for 7080
2001-7100	Automation Package for 7100
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
2016-7060	Fluid Level Adapter, 7060 (page 106)
2016-7080	Fluid Level Adapter, 7080 (page 106)
2019-7100	Fluid Level Adapter, 7100 (page 106)
2069	8X Magnifier Scope, with mounts (page 106)
2030	Fast Start Cooler

No product durability test is too severe for Dave (mechanical engineering).

Ranges from –80°C to 110°C

Specifications	7060	7080	7100
			
Range	–60°C to 110°C	–80°C to 110°C	–100°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 5012)	±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 5012)	±0.003°C at –100°C (methanol)
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 5012)	±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 5012)	±0.005°C at –100°C (methanol)
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		350 and 700 Watts
Access Opening (call for custom sizes)	5" x 10" (127 x 254 mm)		3.8" diameter (98 mm)
Depth	12" (305 mm)		16" (406 mm)
Wetted Parts	304 stainless steel		
Power	230 VAC (±10%), 50 or 60 Hz, 13 A, single phase, specify frequency		230 VAC (±10%), 50 or 60 Hz, 12 A, specify frequency
Volume	7.2 gallons (27 liters)		4.8 gallons (18 liters)
Weight	350 lb. (159 kg)		400 lb. (182 kg)
Size	46" H x 30.5" W x 19" D (1168 x 775 x 483 mm)		50" H x 32" W x 19" D (1270 x 813 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

Avoid Moisture Problems in Cold Baths

Water vapor from ambient air can condense into your cold bath at temperatures below the dew point. This can create problems for your bath's stability, uniformity, and ability to cool.

If you're using a water miscible bath fluid, like alcohol or ethylene glycol, the water is simply absorbed by the fluid. However, as the water content increases, ice crystals can form, increasing the viscosity of the fluid.

In fluids that do not absorb water (like silicone oils), water will collect as ice on the surfaces of bath tanks or exposed cooling coils. Eventually, the ice can form an insulating barrier between the cooled tank wall (or coils) and the bath fluid itself. In this case, the bath may develop trouble reaching its low temperature and keeping the fluid uniform and stable. In extreme cases, enough ice can build up to impede the stirring of the fluid. This moisture problem is obviously more pronounced in more humid environments.

Here's what you can do:

- Always keep the bath access cover in place to prevent moist ambient air from circulating into the bath.
- Supply a dry air positive pressure in the bath. You can do this by running a tube from a dry air source through a stoppered hole, like the bath fill hole. Be sure to adjust the gas flow so it's just enough to maintain a positive pressure flow.
- Periodically boil off the water at 100°C when using oils.
- Replace alcohol when it becomes saturated with water.