

HIGH-ACCURACY DRY-WELLS



High-Accuracy Dry-Wells

Models 9105, 9107, 9122, and 9127

World's best dry-wells—accurate to 0.1°C, stable to $\pm 0.005^\circ\text{C}$

Largest-capacity temperature wells

Model 9107 reaches lowest temperatures: -45°C in 23°C ambient

Hart's dry-wells are the best in this industry, not only because of their performance specs, but because they're the easiest to use and have a variety of software packages available to fully automate the calibration of sensors.

These units are specifically built for the demanding requirements of temperature work in calibration labs. Each instrument has excellent stability, uniformity, and accuracy and features Hart's own proprietary controller for precision work; you can set the temperature with 0.01°C resolution. Our new Model 9107 Ultracold Dry-Well even reaches -45°C in normal room temperatures.

All four dry-wells come with an RS-232 port and have an optional IEEE interface available. However, unlike the competition, Hart dry-wells include our 9930 *Interface-it* software for controlling the unit with your PC. And if you want more, buy our 9932 *Calibrate-it* software, which totally automates the calibration process for RTDs, thermocouples, and thermistors.

No other company offers software packages that are even close to these two from Hart. Our *Calibrate-it* software is not entry-level data acquisition stuff. It is a total automation solution for the calibration process. These packages do everything but take the probe out of your dry-well when the calibration process is

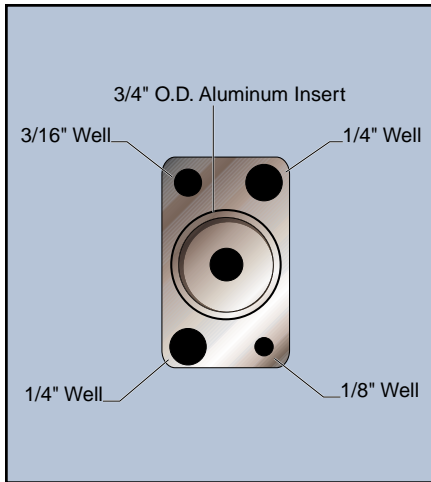
done, and we're working on a program that will do that too! (See page 80.)

If you don't want to use a PC with these dry-wells, program them through the front panel to automatically set and hold up to eight temperatures in the sequence and duration of your choice. Each unit also has a "switch test" protocol that locks in the triggering temperature for thermal switches. The dry-well's ramp rate can be set to a speed of your choosing.

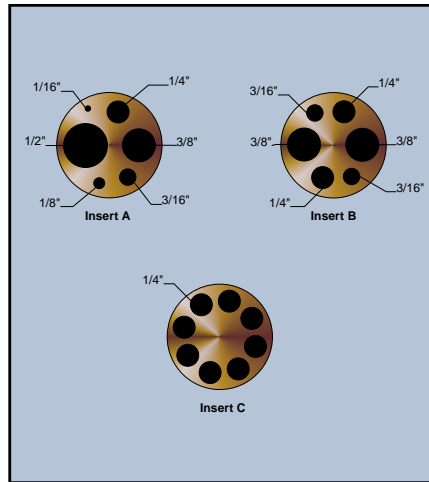
Each dry-well is completely tested and calibrated before shipment, and we don't charge extra for the traceability certificate. When accuracy and stability are important to your work, Hart is your best choice, especially when you compare prices.

Model 9105

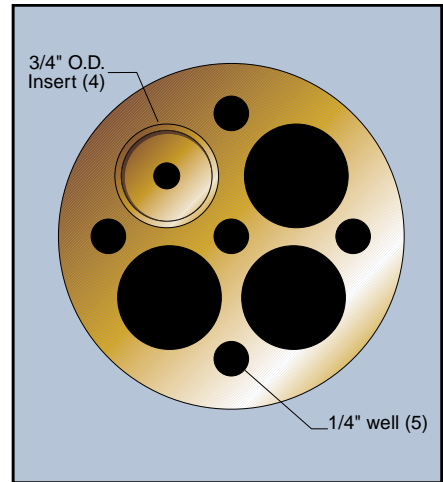
The Model 9105 Dry-Well has a temperature range of -25°C to 140°C with a stability of $\pm 0.01^\circ\text{C}$. It has four outside wells of various sizes and a custom-size



The 9105 and 9107 block has five calibration wells, one of which accepts interchangeable inserts.



The 9127 block has one well that accepts interchangeable inserts.



The 9122 has the most wells of any dry-well: nine total with four that accept interchangeable inserts.

center well as shown in the illustration. Well-to-well uniformity in the drilled wells is $\pm 0.05^{\circ}\text{C}$.

Used with a standards probe, the Model 9105 has the test well uniformity and the stability to give you $\pm 0.05^{\circ}\text{C}$ calibration accuracy. The high-precision, microprocessor-based controller has 0.01 degrees of resolution.

You recalibrate your 9105 through its front panel, which reduces the cost and problems of recertifying your instrument. It comes with a NIST-traceable calibration at no additional cost, making the 9105 dry-well an even better value.

Model 9107

Need temperatures colder than -25°C ? The Model 9107 Ultracold Dry-Well gets you to -45°C in a 23°C ambient and still covers temperatures as high as 140°C . You won't find another dry-well anywhere that gets colder—or that is more stable.

The 9107 features five calibration wells, incredible accuracy, and stability better than $\pm 0.005^{\circ}$ over most of its range. Like the 9105, this ultracold dry-well doesn't use a compressor and doesn't require external cooling. Peltier modules do all the work so you don't have to worry about external hookups or cold ambient temperatures. Hart's dry-wells are simply easier to use and outperform everything else out there.

Model 9122

Too many probes to calibrate and not enough time? The Model 9122 High Capacity Dry-Well lets you calibrate up to nine probes simultaneously, manually or under PC control. Load your probes in the 9122 and start your calibration. You won't have to touch them again until the calibration is complete.

The temperature in any of the nine test wells is accurate to $\pm 0.2^{\circ}\text{C}$ up to 300°C and $\pm 0.7^{\circ}\text{C}$ at 600°C . This includes all errors such as uniformity between wells, repeatability, and the uncertainty of the NIST-traceable calibration. Put your probe in any well and compare its output to the 9122's display, or use it with a reference probe for comparison calibrations and even greater accuracy.

For testing only one probe, use the center well for an accuracy of $\pm 0.1^{\circ}\text{C}$ up to 300°C and $\pm 0.3^{\circ}\text{C}$ at 600°C . The Model 9122 is a great buy, especially if you have high-volume calibration needs.

Model 9127

For work between 50°C and 600°C , the Model 9127 is one of our most popular instruments. It has a "smart" controller that automatically increases fan speed for cooling the block and then reduces the fan speed at a specific set-point temperature for maximum stability during calibrations.



Our 9304 carrying case fits any of our four Super Dry-Well Models.

It has an accuracy of $\pm 0.15^{\circ}\text{C}$ up to 300°C and $\pm 0.5^{\circ}\text{C}$ to 600°C . Resolution is 0.01°C and stability is $\pm 0.02^{\circ}\text{C}$ at 300°C . Inserts are available with multiple sensor holes for doing comparison calibrations. Uniformity between holes is typically $\pm 0.01^{\circ}\text{C}$.

For fast cool-downs of a Model 9122 or 9127 dry-well, the optional Model 2032 Air Chiller connects directly to shop air to inject cool air into the well and reduce cooling times by more than 50%.

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Specifications	9105	9107	9122	9127
Range	-25°C to 140°C (-13°F to 284°F) at 23°C ambient	-45°C to 140°C (-49°F to 284°F) at 23°C ambient	50°C to 600°C (122°F to 1112°F)	50°C to 600°C (122°F to 1112°F)
Accuracy	Center well: ±0.1°C	Center well: ±0.1°C	Center well: ±0.1°C at 100°C ±0.1°C at 300°C ±0.3°C at 600°C	±0.1°C at 100°C ±0.15°C at 300°C ±0.5°C at 600°C
Stability	±0.01°C	±0.01°C at -40°C ±0.005°C at 0°C ±0.005°C at 100°C	±0.01°C at 100°C ±0.02°C at 300°C ±0.04°C at 600°C	±0.01°C to 100°C ±0.02°C to 300°C ±0.05°C to 600°C
Well-to-Well Uniformity	Drilled wells: ±0.05°C	Drilled wells: ±0.05°C	±0.05°C at 100°C ±0.12°C at 300°C ±0.45°C at 600°C	±0.05°C
Well Depth	6" (152 mm)			
Computer Interface	RS-232 Interface included with Model 9930 Interface- <i>it</i> control software, IEEE optional			
Heating Time to Max.	10 minutes	15 minutes	45 minutes	30 minutes
Test Wells	5 wells: 2 at 1/4" (6.35 mm), 1 at 3/16" (4.8 mm), 1 at 1/8" (3.2 mm), and 1 interchangeable	5 wells: 2 at 1/4" (6.35 mm), 1 at 3/16" (4.8 mm), 1 at 1/8" (3.2 mm), and 1 interchangeable	9 wells: 4 interchangeable and 5 at 1/4" (6.35 mm)	1 interchangeable well accommodates multi-hole insert
Resolution	0.01°C or °F			
Display	LED, °C or °F, user-selectable			
Size	13.5" H x 7.8" W x 11.9" D (343 x 198 x 302 mm)			
Weight	26 lb. (11.8 kg)	22 lb. (10 kg)	25 lb. (11.3 kg)	25 lb. (11.3 kg)
Power	115 VAC (±10%), 3 A or 230 VAC (±10%), 1.5 A, specify, 50/60 Hz, 350 W	115 VAC (±10%), 3 A or 230 VAC (±10%), 1.5 A, specify, 50/60 Hz, 350 W	115 VAC (±10%), 5.4 A or 230 VAC (±10%), 2.7 A, specify, 50/60 Hz, 700 W	115 VAC (±10%), 8.8 A or 230 VAC (±10%), 4.4 A, switchable, 50/60 Hz, 1000 W
NIST-Traceable Calibration	Data at -25°C, 0°C, 75°C, 140°C	Data at -40°C, 0°C, 75°, 140°C	Data at 100°C, 200°C, 300°C, 400°C, 500°C, 600°C	Data at 100°C, 200°C, 300°C, 400°C, 500°C, 600°C

Ordering Information		9105, 9107	Ordering Information		9122	Ordering Information		9127
9105	Low-Temp Dry-Well (includes 1/4" insert)		9122	High-Capacity Dry-Well (includes 1/8", 3/16", 3/8", and 1/4" inserts)		9127-X	High-Speed Dry-Well with removable multi-hole insert (specify X, X = A, B, or C included insert)	
9107	Ultra Low-Temp Dry-Well, includes 1/4" insert		2125	IEEE-488 Option		2125	IEEE-488 Option	
2125	IEEE-488 Option		2152	Blank Insert		3109-0	Insert, blank	
2168	Blank Insert		2154	1/8" Insert (3.2 mm)		3109-1	Insert A, holes at 1/16", 1/8", 3/16", 1/4", 3/8", 1/2" (1.6, 3.2, 4.8, 6.35, 9.5, 12.7 mm)	
2169	1/16" Insert (1.6 mm)		2155	5/32" Insert (4 mm)		3109-2	Insert B, two holes each at 3/16", 1/4", 3/8" (4.8, 6.35, 9.5 mm)	
2170	1/8" Insert (3.2 mm)		2156	3/16" Insert (4.8 mm)		3109-3	Insert C, eight holes each at 1/4" (6.35 mm)	
2171	5/32" Insert (4 mm)		2157	1/4" Insert (6.35 mm)		9304	Carrying Case	
2172	3/16" Insert (4.8 mm)		2158	5/16" Insert (7.9 mm)		2032	Air Chiller, Dry-Well	
2173	1/4" Insert (6.35 mm)		2159	3/8" Insert (9.5 mm)				
2174	5/16" Insert (7.9 mm)		2160	1/2" Insert (12.7 mm)				
2175	3/8" Insert (9.5 mm)		2161	5/8" Insert (15.9 mm)				
2176	1/2" Insert (12.7 mm)		2162	1 User-Specified Hole				
2177	5/8" Insert (15.9 mm)		2163	2 User-Specified Holes				
2181	1 User-Specified Hole		9304	Carrying Case				
2182	2 User-Specified Holes		2032	Air Chiller, Dry-Well				
9304	Carrying Case							



Call for custom inserts.



Have you considered an external reference? See page 39.