

# Handheld dry-wells



- Smallest dry-wells in the world
- Proprietary Hart Scientific controller
- Accuracy to  $\pm 0.25$  °C, stability of  $\pm 0.05$  °C at 0 °C
- RS-232 interface with Hart Interface-it software

Hart's line of portable dry-wells is incredible. They're the smallest, lightest, and most portable dry-wells in the world. And now they're better than ever!

## 9100S Dry-Well

Since we introduced the world's first truly handheld dry-well, many have tried to duplicate it. Despite its small size (57 mm [2¼ in] high and 127 mm [5 in] wide) and light weight, the 9100S outperforms every dry-well in its class in the world.



Take the 9100S anywhere. It's the smallest dry-well in the world.

It's simple and convenient, too. Anyone can learn to use one in less than 15 minutes. It has a range to 375 °C (707 °F) and is perfect for checking RTDs, thermocouples, and small bimetal thermometers in the field.

Plug it in, switch it on, set the temperature with the front-panel buttons, and insert your probe into the properly sized well. Compare the reading of your device to the display temperature or to an external reference, and the difference is the error in your device. With a proprietary Hart Scientific temperature controller, the 9100S has a display resolution of 0.1 degrees. Display accuracy ranges from  $\pm 0.25$  °C to  $\pm 0.5$  °C and stability ranges from  $\pm 0.07$  °C to  $\pm 0.3$  °C, depending on set-point temperature.

## 9102S Dry-Well

For work in the temperature range of  $-10$  °C to 122 °C, Hart's Model 9102S dry-well is another first in the industry, featuring display accuracy of  $\pm 0.25$  °C.

This dry-well is only four inches high and six inches wide, achieves

temperatures as low as  $-10$  °C, includes a NIST-traceable calibration, and is stable to  $\pm 0.05$  °C. The Model 9102S is excellent for dial gauges, digital thermometers, bulb switches, and other sensors that need calibration below ambient.

The 9102S has two wells so you can use one for a reference thermometer to increase accuracy. Both wells are 12.7 mm (1/2 in) in diameter, and each has inserts available for almost any sensor size. The 9102S also has a battery pack option that gives you approximately four hours of field use when AC power is unavailable.

## Increase dry-well performance with a reference thermometer

To increase the performance of a block calibrator and the accuracy level of your calibrations, add a reference thermometer to your system. The Tweener Thermometers and Handheld Thermometers on pages 56–60 can bring your NIST-traceable uncertainty from  $\pm 0.5$  °C to  $\pm 0.05$  °C.

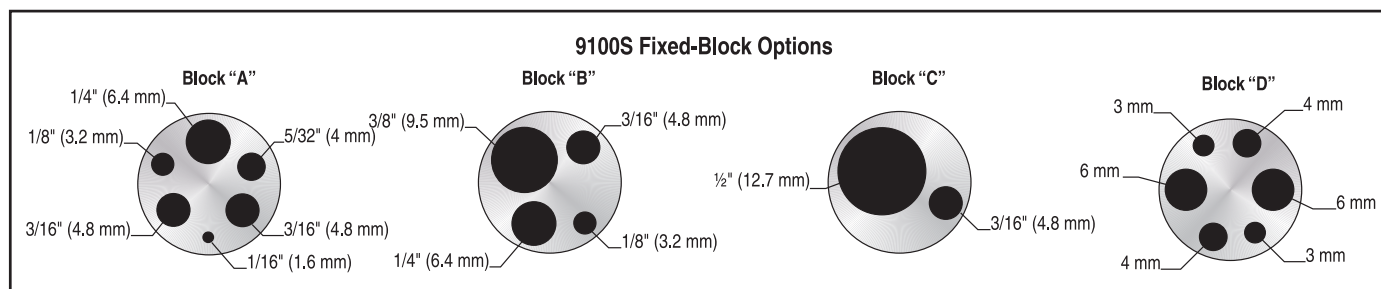
Using a comparison technique, users insert both the test and reference probe into the same block at the same time, which yields a much better calibration. Both probes, if inserted at the same depth with similar size and diameters, will be sensing more of the same temperature than a single probe inserted and compared to the sensor that feeds the display.

Tweener and Handheld Thermometers are used with a high-accuracy reference PRT or thermistor calibrated to the ITS-90 scale and included with a certificate and calibration coefficients.

We designed many of our field calibrators with removable insert sleeves that have multiple holes drilled for use with a reference thermometer system.

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Specifications	9100S	9102S
Range	35 °C to 375 °C (95 °F to 707 °F)	-10 °C to 122 °C (14 °F to 252 °F) at 23 °C ambient
Accuracy	± 0.25 °C at 50 °C; ± 0.25 °C at 100 °C; ± 0.5 °C at 375 °C	± 0.25 °C
Stability	± 0.07 °C at 50 °C; ± 0.1 °C at 100 °C; ± 0.3 °C at 375 °C	± 0.05 °C
Well-to-Well Uniformity	± 0.2 °C with sensors of similar size at equal depths within wells	
Heating Times	35 °C to 375 °C: 9.5 minutes	ambient to 100 °C: 10 minutes
Stabilization	5 minutes	7 minutes
Cooling Times	375 °C to 100 °C: 14 minutes	ambient to 0 °C: 10 minutes
Well Depth	102 mm (4 in); 1.6 mm (1/16 in) hole is 89 mm (3.5 in) deep	102 mm (4 in)
Removable Inserts	N/A	Available in sizes from 1.6 mm (1/16 in) to 11.1 mm (7/16 in) [6.4 mm (1/4 in) and 4.8 mm (3/16 in) included]
Power	115 V ac (± 10 %), 55–65 Hz, 1.5 A or 230 V ac (± 10 %), 0.8 A, 45–55 Hz, 175 W	94–234 V ac (± 10 %), 50/60 Hz, 60 W; or 12 VDC
Size (HxWxD)	57 x 125 x 150 mm (2.25 x 4.9 x 6.1 in)	99 x 140 x 175 mm (3.9 x 5.5 x 6.9 in)
Weight	1 kg (2 lb 3 oz)	1.8 kg (4 lb)
Computer Interface	RS-232 included with free Interface-it software	
NIST-Traceable Calibration	Data at 50 °C, 100 °C, 150 °C, 200 °C, 250 °C, 300 °C, and 375 °C	Data at -10 °C, 0 °C, 25 °C, 50 °C, 75 °C, 100 °C, and 122 °C



9100S fixed-block options. Order number 9100S-A, 9100S-B, 9100S-C, or 9100S-D for the desired block option.



9102S block configuration. Instrument includes 1/4" and 3/16" inserts. Order additional sizes as needed.

**Ordering Information - 9100S**

- 9100S-A** HDRC Handheld Dry-Well A
- 9100S-B** HDRC Handheld Dry-Well B
- 9100S-C** HDRC Handheld Dry-Well C
- 9100S-D** HDRC Handheld Dry-Well D
- 9300** Rugged Carrying Case

**Ordering Information - 9102S**

- 9102S** HDRC Handheld Dry-Well
- 3102-0** Insert, blank
- 3102-1** Insert, 1/16 in (1.6 mm)
- 3102-2** Insert, 1/8 in (3.2 mm)
- 3102-3** Insert, 3/16 in (4.8 mm)
- 3102-4** Insert, 1/4 in (6.4 mm)
- 3102-5** Insert, 5/16 in (7.9 mm)
- 3102-6** Insert, 3/8 in (9.5 mm)
- 3102-7** Insert, 7/16 in (11.1 mm)
- 3102-8** Insert, 5/32 in (4 mm)
- 9308** Carrying Case
- 9320A** External Battery Pack, 115 V ac