

# Infrared Calibrators

- Temperatures available from  $-30^{\circ}\text{C}$  to  $500^{\circ}\text{C}$
- Large 57-mm targets
- RTD reference well for traceable temperature verification
- Light, compact designs for easy portability

Whether you're using in-line or handheld infrared pyrometers, you need good calibration standards to verify their accuracy and stability. Hart's two portable IR calibrators provide stable blackbody targets for calibrating non-contact IR thermometers from  $-30^{\circ}\text{C}$  to  $500^{\circ}\text{C}$ .

Both units feature 57-mm blackbody targets, which offer a large field of view area for optical variations in infrared thermometers. The emissivity of the targets is  $0.95 (\pm 0.02)$ , and the temperature can be controlled in set-point increments of  $0.1^{\circ}$ . For even higher precision, a well is located directly behind the blackbody surface for contact calibration of the blackbody.

## Model 9132

For high-temperature IR calibrations, the 9132 provides a stable blackbody to  $500^{\circ}\text{C}$ . With accuracy to  $\pm 0.8^{\circ}\text{C}$  and stability to  $\pm 0.1^{\circ}\text{C}$ , this new portable IR unit can certify most handheld pyrometers.

Short heating and cooling times mean you won't have to wait long to get your work done. From room temperature to  $500^{\circ}\text{C}$ , the 9132 achieves stability within 30 minutes.

## Model 9133

For calibrating IR guns at cold temperatures, the 9133 reaches  $-30^{\circ}\text{C}$  in normal ambient conditions with solid-state cooling technology. With a conveniently located dry gas fitting on the front bezel, the 9133 won't build up ice on the target. At the upper end of its range, the 9133 provides stable temperatures to  $150^{\circ}\text{C}$ .

With heating and cooling times of about 15 minutes from ambient to either extreme, the 9133 gets you to temperature quickly and performs when it gets there. Just compare your IR devices to the temperature display of this unit - it's factory calibrated to be within  $\pm 0.4^{\circ}\text{C}$ .



# Ice-Point Calibrator

- Bath-quality stability in a portable dry reference
- Easy recalibration for long-term stability
- Solid-state cooling technology

Need a reliable source for checking thermometers at  $0^{\circ}\text{C}$  or to provide an ice-point reference for thermocouples? Hart Scientific has the perfect solution.

Hart's **model 9101** has three 152-mm-deep test wells - all stable to  $\pm 0.005^{\circ}\text{C}$ . One well accommodates changeable inserts for varying probe diameters (a well-sizing tube set is included; the other two wells are 6.35 mm in diameter). Since the unit is completely self-contained and doesn't require any user settings, you can run it on demand for instant access to an accurate, traceable zero point.

The **9101** takes advantage of the latest solid-state cooling technology. Our solid-state cooler is run by an adjustable electronic controller that can be recalibrated in your lab for convenient recertification. Simply place a certified standards thermometer in one of the wells and, if needed, adjust the **9101** controller until the standards thermometer reaches equilibrium at  $0^{\circ}\text{C}$ .

Less costly than refrigerated baths, more accurate and less problematic than ice baths, and more durable than competitive units using sealed water cells, the Hart **model 9101** zero-point dry-well is a great choice for any calibration lab.



# Dry-Well Specifications

Class	Model	Temp Range (°C)	Display Accuracy (°C)	Stability (±°C)	Block Type	Speed	Size in cm (H x W x D)	Weight (Kg)
Micro-Baths	6102	35 to 200	0.25	0.02 at 100	Silicone oil	23 °C to 200 °C: 40 min.	26 x 14 x 20	4.5
	7102	-5 to 125	0.25	0.015 at -5	Silicone oil	23 °C to 0 °C: 30 min.	31 x 18 x 24	6.8
	7103	-30 to 125	0.25	0.03 at -25	Silicone oil	23 °C to -20 °C: 45 min.	34 x 23 x 26	9.8
Handheld Dry-Wells	9100S	35 to 375	0.5 at 375	0.3 at 375	Fixed with 2-6 holes	23 °C to 375 °C: 9.5 min.	6 x 13 x 15	1.1
	9102S	-10 to 122	0.25	0.05	Two removable inserts	23 °C to 0 °C: 10 min.	10 x 14 x 18	1.8
Field Dry-Wells	9103	-25 to 140	0.25	0.02 at -25	Removable 6-hole insert	23 °C to -25 °C: 20 min.	26 x 14 x 25	5.7
	9140	35 to 350	0.5	0.05 at 350	Removable 6-hole insert	23 °C to 350 °C: 12 min.	9 x 15 x 20	2.7
	9141	50 to 650	1.0 at 650	0.12 at 650	Removable 6-hole insert	23 °C to 650 °C: 12 min.	24 x 11 x 19	3.6
Dual-Block Dry-Wells	9009	-15 to 110, 50 to 350	0.2 (cold block) 0.6 (hot block)	0.05	Two removable inserts, each block	23 °C to -15 °C: 16 min. 23 °C to 350 °C: 10 min.	18 x 27 x 25	4.5
	9011	-30 to 140, 50 to 670	0.25 at -30 0.65 at 600	0.02 at -30 0.06 at 600	One insert and four fixed wells (cold block); one insert (hot block)	23 °C to -30 °C: 20 min. 23 °C to 670 °C: 30 min.	29 x 39 x 27	16.4
Lab Dry-Wells	9105	-25 to 140	0.1	0.01	1 removable insert, 4 fixed wells	23 °C to -25 °C: 15 min.	35 x 20 x 30	11.8
	9107	-45 to 140	0.1	0.005 at 0	1 removable insert, 4 fixed wells	23 °C to -45 °C: 35 min.	35 x 20 x 30	10.0
	9122A	50 to 700	0.3 at 660	0.04 at 660	4 removable inserts, 5 fixed wells	23 °C to 700 °C: 50 min.	35 x 20 x 30	11.3
	9127	50 to 600	0.5 at 600	0.05 at 600	Removable 6-8-hole insert	23 °C to 600 °C: 30 min.	35 x 20 x 30	11.3
Ice-Point Dry-Well	9101	0	0.05	0.005	Fixed with 3 wells	23 °C to 0 °C: 30 min.	31 x 22 x 15	5.4
Field Furnace	9150	150 to 1200	5	0.5	Removable 6-hole insert	23 °C to 1200 °C: 35 min.	32 x 21 x 32	13.0
Lab Furnace	9112A	300 to 1100	Used for comparison	0.1 at 1100	Removable 5-hole block	23 °C to 1100 °C: 5 hours	46 x 34 x 66	33.0
Infra red Calibrators	9132	50 to 500	0.8 at 500	0.3 at 500	57-mm blackbody, $\epsilon = 0.95 (\pm 0.02)$	23 °C to 500 °C: 30 min.	10 x 15 x 18	1.8
	9133	-30 to 150	0.4	0.1	57-mm blackbody, $\epsilon = 0.95 (\pm 0.02)$	23 °C to -20 °C: 15 min.	15 x 29 x 27	4.6



## More Temperature Instruments from Hart

Hart Scientific not only manufactures first class industrial temperature measurement and calibration instrumentation, it manufactures everything needed in measuring and calibrating temperature. Its full product offering includes also everything from fixed point cells and maintenance furnaces, constant temperature baths, SPRTs, precision read-outs and data loggers. Hart is the world's leading manufacturer of temperature and measurement equipment. Hart Scientific's leading temperature calibration products, are available and backed up by technical support, customer service and a full accredited calibration lab through your local specially selected distributor.

For more information on the other products from Hart contact your local Hart distributor for any of the following documents:

- Primary Standards,
- Constant Temperature Baths,
- Thermometry Readouts and Probes,
- Full Catalog