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HI 93532 • HI 93532N • HI 93532R

K-Type Thermocouple Thermometers

Dual-Input, Waterproof K-Type



HI 710008 Shockproof Rubber Boot



K-type thermocouple probes should be ordered separately to meet your specific application.

SPECIFICATIONS	HI 93532	HI 93532N	HI 93532R
Range	-200.0 to 999.9°C; 1000 to 1371°C; -328.0 to 999.9°F; 1000 to 2500°F		
Resolution	0.1°C (-149.9 to 999.9°C); 0.2°C (-200.0 to -150.0°C); 1°C (outside) 0.1°F (-24.9 to 999.9°F); 0.2°F (-249.9 to -25.0°F); 0.3°F (-328.0 to -250.0°F); 1°F (outside)		
Accuracy	±0.5°C (-100.0 to 999.9°C); ±1°C (outside); ±1°F (-148.0 to 999.9°F); ±1.5°F (outside) (for 1 year, excluding probe error)		
Probe	K-thermocouple type, HI 766 series (not included)		
CAL Button	N/A	Yes	Yes
Backlit LCD	N/A	Yes	Yes
RS232	N/A	N/A	Yes
Battery Type / Life	(3) 1.5V AA / approx. 500 hours of continuous use (with backlight off); auto-off after 60 minutes of non-use (can be disabled)		
Environment	-10 to 50°C (14 to 122°F); RH max 100%		
Dimensions	150 x 80 x 36 mm (5.9 x 3.1 x 1.4")		
Weight	235 g (8.3 oz.)		

ORDERING INFORMATION

HI 93532, **HI 93532N** and **HI 93532R** are supplied with 1.5V AA alkaline batteries (3) and instruction manual

PROBES

HI 766C Penetration K-type temperature probe with 1 m cable

HI 766D Air K-type temperature probe with 1 m cable

HI 766E1 General purpose K-type temperature probe with 1 m cable

ACCESSORIES

HI 710007 Shockproof rubber boot, blue

HI 710008 Shockproof rubber boot, orange

HI 710018 Spare protective case

HI 92000 Windows® compatible software

HI 920011 Serial cable for PC connection

Measure 2 Samples at the Same Time

Engineering tests often require two samples to be measured simultaneously. For this reason, HI 93532 has two built-in K-type probe connectors. This advanced meter has a dual-level LCD that shows the current reading along with the high and low temperatures in either channel. You can also see the difference between the two channels simultaneously with the high and low of the difference. Any reading can be frozen on the display for easy recording with the HOLD button.

HI 93532 reads with a resolution of 0.1°C in the range of -149.9 to 999.9°C. This resolution was once only possible in advanced research labs.

For even greater accuracy, the HI 93532N offers all the features of the HI 93532 plus a CAL button allowing simple calibration of the meter and probe with an ice bath at 0°C. HI 93532N also features a backlight for low light conditions.

In addition, the HI 93532R model allows users to send the displayed measurements to a PC or printer through RS232 serial port (once every 2 seconds).

- *Dual ranges*
- *High accuracy + 0.2% Full Scale, excluding probe error*
- *Waterproof casing with ergonomic design*
- *Tactile rubber keys to prevent the ingress of substances*
- *Large dual level LCD displays high and low readings along with current temperature*
- *HOLD button freezes readings on the display*
- *Battery level indicator at startup*
- *Low battery warning with BEPS*
- *Battery life of 500 hours*
- *Backlit Display (HI 93532N and HI 93532R)*
- *Calibration feature (HI 93532N and HI 93532R)*
- *PC and printer compatible (HI 93532R)*

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hold | B.E.P.S. | lcd display | backlight | audible | cal 0°C

HI 93530 • HI 93530N

K-Type Thermocouple Thermometers

Waterproof, 0.1° up to 999.9°C/°F

High Accuracy and Resolution Temperature Measurement

HI 93530 and HI 93530N are waterproof thermometers that use a powerful microprocessor to linearize the response of the thermocouple in order to achieve high accuracy and resolution.

These instruments can read with a resolution of 0.1 in the -149.9 to 999.9°C and -24.9 to 999.9°F ranges. These meters are equipped with a HOLD function that freezes the current reading on the LCD. The °C/°F button will change between the Celsius and Fahrenheit ranges; an important feature where measurements are necessary in degrees Celsius as well as Fahrenheit.

HI 93530N has a CAL button to allow the operator to calibrate the meter and probe in an ice bath at 0°C. This will assure the removal of the combined meter and probe interchange error.

In addition to the calibration feature, HI 93530N features a user-activated backlight for low light conditions. Remaining battery power is displayed at startup and a low battery warning and error prevention provides advanced power management to both instruments.

A wide range of thermocouple probes are available for applications such as liquid, air and semisolids.

- *High resolution and accuracy*
- *HOLD button freezes readings on the display*
- *Easily switch between °C and °F*
- *Battery Error Prevention System (BEPS) enabled*



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SPECIFICATIONS	HI 93530	HI 93530N
Range	-200.0 to 999.9°C; 1000 to 1371°C; -328.0 to 999.9°F; 1000 to 2500°F	
Resolution	0.1°C (-149.9 to 999.9°C); 0.2°C (-200.0 to -150.0°C); 1°C (outside) 0.1°F (-24.9 to 999.9°F); 0.2°F (-249.9 to -25.0°F); 0.3°F (-328.0 to -250.0°F); 1°F (outside)	
Accuracy	±0.5°C (-100.0 to 999.9°C); ±1°C (outside); ±1°F (-148.0 to 999.9°F); ±1.5°F (outside) (for 1 year, excluding probe error)	
Probe	K-thermocouple type, HI 766 series (not included)	
CAL Button	N/A	Yes
Backlit LCD	N/A	Yes
Battery Type / Life	(3) 1.5V AA / approx. 500 hours of continuous use (with backlight off); auto-off after 60 minutes of non-use (can be disabled)	
Environment	-10 to 50°C (14 to 122°F); RH max 100%	
Dimensions	150 x 80 x 36 mm (5.9 x 3.1 x 1.4")	
Weight	235 g (8.3 oz.)	



HI 710007 Shockproof Rubber Boot

ORDERING INFORMATION

HI 93530 and **HI 93530N** are supplied with 1.5V AA alkaline batteries (3) and iInstruction manual

PROBES

HI 766C Penetration K-type temperature probe with 1 m cable

HI 766D Air K-type temperature probe with 1 m cable

HI 766E1 General purpose K-type temperature probe with 1 m cable

ACCESSORIES

HI 710007 Shockproof rubber boot, blue

HI 710008 Shockproof rubber boot, orange

HI 710018 Spare protective case

HI 9063

K-Type Thermocouple Thermometer

Waterproof, Heavy-Duty



Designed for Heavy-Duty Applications

Instrumentation used in the field or industry is subject to environmental extremes. Due to this problem, HANNA has developed the HI 9063 to satisfy all of your heavy-duty application needs.

This upgraded version of HI 9063 benefits from HANNA extensive experience in producing instruments that surpass the competition. The measurement ceiling has been raised, auto-ranging added and accuracy enhanced.

Because it is often necessary to know the highest and lowest temperatures measured during a certain process, HANNA has incorporated a dual-level LCD that shows the current, minimum and maximum achieved temperatures.

Temperature readings are linearized for increased accuracy and resolution is automatically switched from 0.1° to 1° at 200°C (400°F) and above.

- *HOLD button freezes readings on the display*
- *View High, Low and Current Readings Simultaneously*
- *Autoranging*
- *Enhanced accuracy*

SPECIFICATIONS	HI 9063 • HI 9063C
Range	-50.0 to 199.9°C; 200 to 1350°C -58.0 to 399.9°F; 400 to 2462°F
Resolution	0.1°C (-50.0 to 199.9°C); 1°C (outside) 0.1°F (-58.0 to 399.9°F); 1°F (outside)
Accuracy	±0.2% F.S. (for 1 year, excluding probe error)
Probe	K-thermocouple type, HI 766 series
Battery Type / Life	(4) 1.5V AA / approx. 2000 hours of continuous use
Environment	-10 to 50°C (14 to 122°F); RH max 100%
Dimensions	196 x 80 x 60 mm (7.7 x 3.1 x 2.4")
Weight	500 g (1.1 lbs.)

ORDERING INFORMATION

HI 9063 is supplied with batteries (4) and instruction manual.

HI 9063C is supplied with HI 766HD probe handle, HI 766PE1, HI 766PB, HI 766PD probes, batteries, rugged carrying case and instructions.

PROBES

HI 766C	Penetration, K-thermocouple probe with 1 m cable
HI 766E1	General purpose, K-thermocouple probe with 1 m cable

ACCESSORIES

HI 710021	Spare protective case
HI 721317	Rugged carrying case



HI 721317 Rugged Carrying Case

HANNA instruments

With Great Products, Come Great Results™

K-Type Thermocouple Thermometers

Featuring a Wide Measurement Range

Economical Instruments with Advanced Features

HI 9043 is a hand-held thermometer that uses a K-type probe together with an advanced microprocessor to deliver temperature measurements in a wide range. The meter is housed in a rugged ABS case for maximum protection anywhere. The smooth keypad with membrane button will easily wipe clean.

In addition to an extended range and better accuracy, a dual-level LCD will display the highest and lowest temperatures measured in the cycle, while also displaying the current temperature. The HOLD button will guarantee the user as much time as necessary to record the readings. The °C/°F button allows the user to easily switch between the Celsius and Fahrenheit ranges.

At startup, HI 9043 performs a self-check and displays remaining battery life.

A wide variety of interchangeable probes are available for the HI 9043 to meet each specific application.

HI 9044 offers all the features and benefits of HI 9043. The only difference is that a fixed liquid probe is included with this popular thermocouple thermometer.

- *HOLD button freezes readings on the display*
- *View Hi, Low and Current Reading Simultaneously*
- *Switch between °C and °F at the touch of a button*
- *Battery life on display*



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SPECIFICATIONS	HI 9043	HI 9044
Range	-50.0 to 1350°C -58.0 to 2462°F	-50.0 to 900°C -58.0 to 1650°F
Resolution	0.1°C (-50.0 to 199.9°C); 1°C (outside) 0.1°F (-58.0 to 399.9°F); 1°F (outside)	
Accuracy	±0.2% F.S. (for 1 year, excluding probe error)	
Probe	K-thermocouple type, HI 766 series (not included)	HI 766E2 (fixed)
Battery Type / Life	(1) 9V / approx. 500 hours of continuous use	
Environment	-10 to 50°C (14 to 122°F); RH max 95%	
Dimensions	180 x 83 x 40 mm (7.1 x 3.3 x 1.6")	
Weight	226 g (8.0 oz.)	



HI 721316 Rugged Carrying Case

ORDERING INFORMATION

HI 9043 is supplied with 9V battery and instruction manual

HI 9044 is supplied with HI 766E2 fixed probe, 9V battery and instruction manual

PROBES

HI 766C Penetration, K-thermocouple probe with 1 m cable

HI 766E1 General purpose, K-thermocouple probe with 1 m cable

ACCESSORIES

HI 710009 Shockproof rubber boot, blue

HI 710010 Shockproof rubber boot, orange

HI 710020 Spare protective case

HI 721316 Rugged carrying case

HI 8757 • HI 8758

K-Type Thermocouple Thermometers

for Education



Ideal Teaching Tool for Teachers and Students

K-type thermocouple probes are among the most widely used probes for high range temperature measurements. With advancements in technology, we have increased the performance and added features to these popular educational thermometers.

HI 8757 and HI 8758 utilize K-type thermocouple probes to provide temperature measurements in an extended range from -50 to 1350°C or -58 to 2462°F.

Startup battery level indication, 500 hours of battery life and ease of use lend these thermometers perfect for temperature experiments in classrooms. These meters also feature a Battery Error Prevention System (BEPS), durable ABS housings and rugged stainless steel probes making them long lasting, even when used for repeated experiments.

HANNA instruments® offers a wide range of interchangeable K-type thermocouple temperature probes to serve your individual needs.

- *Designed for Educators and Students*
- *Economical and Rugged*
- *Wide range of probes available*
- *Easy to use*

SPECIFICATIONS	HI 8757	HI 8758
Range	-50.0 to 1350°C	-58.0 to 2462°F
Resolution	0.1°C (-50.0 to 199.9°C) 1°C (200 to 1350°C)	0.1°F (-58.0 to 399.9°F) 1°F (400 to 2462°F)
Accuracy	±0.5% F.S. (for 1 year, excluding probe error)	
Probe	K-thermocouple type, HI 766 series (not included)	
Battery Type / Life	(1) 9V / approx. 500 hours of continuous use	
Environment	-10 to 50°C (14 to 122°F); RH max 95%	
Dimensions	180 x 83 x 40 mm (7.1 x 3.3 x 1.6")	
Weight	226 g (8.0 oz)	

ORDERING INFORMATION

HI 8757 and **HI 8758** are supplied with 9V battery and instruction manual

PROBES

HI 766C Penetration, K-thermocouple probe with 1 m cable

HI 766E1 General purpose, K-thermocouple probe with 1 m cable

ACCESSORIES

HI 710009 Shockproof rubber boot, blue

HI 710010 Shockproof rubber boot, orange

HI 710002 Soft carrying case

HI 721316 Rugged carrying case



HI 721316 Rugged Carrying Case

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With Great Products, Come Great Results™

hold | B.E.P.S. | lcd display | backlight | audible | cal 0°C

HI 93551 • HI 93551N • HI 93551R

Waterproof K, J, T-Type Thermocouple Thermometers

Switch Between K-J-T-Types with One Meter

It is often necessary to take temperature measurements with different types of thermocouples (K-J-T). Equipped with a button that switches between K-type, J-type or T-type thermocouples, these meters offer the exact versatility and reliablility needed in the field. These instruments can read with a resolution of 0.1 in an extended range of -149.9 to 999.9°C or -24.9 to 999.9°F. These meters are also equipped with a dual-level LCD that shows measured high and low temperatures along with the current reading. To freeze the display for easy recording, simply press the HOLD button. A °C/°F button will toggle between Celsius and Fahrenheit. These instruments have a low battery warning feature and a Battery Error Prevention System (BEPS).

For even greater accuracy, HI 93551N features a CAL button to allow you to calibrate the meter and probe in an ice bath at 0°C. This will assure the removal of the combined meter and probe interchange error.

HI 92551R also features RS232 output for transferring measurements (once every second) to devices with RS232 input (PC or printer).

- *Will accept K, J, T thermocouples and linearize each of the different ranges*
- *High accuracy*
- *Waterproof casing*
- *Tactile rubber keys*
- *Large dual level LCD displays high and low readings along with current temperature*
- *Battery level indicator at startup*
- *HOLD button to freeze display*
- *Low battery warning with BEPS*
- *Long battery life of 500 hours*
- *Optional rubber boots available*
- *Backlit Display (HI 93551N and HI 93551R)*
- *Calibration feature (HI 93551N and HI 93551R)*
- *PC and printer compatible (HI 93551R)*



SPECIFICATIONS		HI 93551	HI 93551N	HI 93551R
Range	K	-200.0 to 999.9°C and 1000 to 1371°C; -328.0 to 999.9°F and 1000 to 2500°F		
	J	-200.0 to 999.9°C; -328.0 to 999.9°F and 1000 to 1832°F		
	T	-200.0 to 400.0°C; -328.0 to 752.0°F		
Resolution	K	0.1°C (-149.9 to 999.9°C); 0.2°C (-200.0 to -150.0°C); 1°C (1000 to 1371°C); 0.1°F (-24.9 to 999.9°F); 0.2°F (-249.9 to -25.0°F); 0.3°F (-328.0 to -250.0°F); 1°F (1000 to 2500°F)		
	J	0.1°C (-200.0 to 999.9°C); 0.1°F (-149.9 to 999.9°F); 0.2°F (-328.0 to -150.0°F); 1°F (1000 to 1832°F)		
	T	0.1°C (-149.9 to 400.0°C); 0.2°C (-200.0 to -150.0°C); 0.1°F (0.0 to 752.0°F); 0.2°F(-270.0 to -0.1°F); 0.3°F (-328.0 to -270.1°F)		
Accuracy		±0.5°C (-100.0 to 999.9°C); ±1°C (outside); ±1°F (-148.0 to 999.9°F); ±1.5°F (outside) (for 1 year, excluding probe error)		
Probe		K-thermocouple type, HI 766 series (not included)		
CAL Button		N/A	Yes	Yes
Backlit LCD		N/A	Yes	Yes
RS232		N/A	N/A	Yes
Battery Type / Life		(3) 1.5V AA / approx. 500 hours of continuous use (with backlight off); auto-off after 60 minutes of non-use (can be disabled)		
Environment		-10 to 50°C (14 to 122°F); RH max 100%		
Dimensions / Weight		150 x 80 x 36 mm (5.9 x 3.1 x 1.4") / 235 g (8.3 oz.)		

ORDERING INFORMATION

HI 93551 is supplied with 9V battery and instruction manual

HI 93551N is supplied complete with batteries, protective case and instructions

HI 93551R is supplied complete with batteries, protective case and instructions

PROBES

HI 766C Penetration K-type temperature probe with 1 m cable

HI 766D Air K-type temperature probe with 1 m cable

HI 766E1 General purpose K-type temperature probe with 1 m cable

ACCESSORIES

HI 710007 Shockproof rubber boot, blue

HI 710008 Shockproof rubber boot, orange

HI 710018 Spare protective case

HI 92000 Windows® compatible software

HI 920011 Serial cable for PC connection

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HI 93542 • HI 93552 • HI 93552R

K, J, T-Type Thermocouple Thermometers

Dual-Channel, Waterproof

average | min/max | cal 0°C | audible | backlight | lcd display | B.E.P.S. | hold



SPECIFICATIONS		HI 93542	HI 93552	HI 93552R
Range	K	-200.0 to 999.9°C and 1000 to 1371°C; -328.0 to 999.9°F and 1000 to 2500°F		
	J	-200.0 to 999.9°C; -328.0 to 999.9°F and 1000 to 1832°F		
	T	-200.0 to 400.0°C; -328.0 to 752.0°F		
Resolution	K	0.1°C (-149.9 to 999.9°C); 0.2°C (-200.0 to -150.0°C); 1°C (1000 to 1371°C); 0.1°F (-24.9 to 999.9°F); 0.2°F (-249.9 to -25.0°F); 0.3°F (-328.0 to -250.0°F); 1°F (1000 to 2500°F)		
	J	0.1°C (-200.0 to 999.9°C); 0.1°F (-149.9 to 999.9°F); 0.2°F (-328.0 to -150.0°F); 1°F (1000 to 1832°F)		
	T	0.1°C (-149.9 to 400.0°C); 0.2°C (-200.0 to -150.0°C); 0.1°F (0.0 to 752.0°F); 0.2°F(-270.0 to -0.1°F); 0.3°F (-328.0 to -270.1°F)		
Accuracy		±0.5°C (-100.0 to 999.9°C); ±1°C (outside); ±1°F (-148.0 to 999.9°F); ±1.5°F (outside) (for 1 year, excluding probe error)		
Probe		K-thermocouple type, HI 766 series (not included)		
CAL Button		N/A	Yes	Yes
Backlit LCD		N/A	Yes	Yes
RS232		N/A	N/A	Yes
Battery Type / Life		(3) 1.5V AA / approx. 500 approx. 500 hours of continuous use (with backlight off); auto-off: after 60 minutes of non-use (HI 93542); selectable after 8 or 60 minutes of non-use (HI 93552) (can be disabled for all models)		
Environment		-10 to 50°C (14 to 122°F); RH max 100%		
Dimensions / Weight		150 x 80 x 36 mm (5.9 x 3.1 x 1.4") / 235 g (8.3 oz.)		

ORDERING INFORMATION

HI 93542 is supplied with batteries, protective case and instructions

HI 93552 is supplied with batteries, protective case and instructions

HI 93552R is supplied with batteries, protective case and instructions

PROBES

HI 766C Penetration K-type temperature probe with 1 m cable

HI 766D Air K-type temperature probe with 1 m cable

HI 766E1 General purpose K-type temperature probe with 1 m cable

ACCESSORIES

HI 710007 Shockproof rubber boot, blue

HI 710008 Shockproof rubber boot, orange

HI 710018 Spare protective case

HI 92000 Windows® compatible software

HI 920011 Serial cable for PC connection

Professional Grade K, J, T Thermometers

HI 93542 and HI 93552 are dual-channel, waterproof K, J and T-type thermocouple professional grade thermometers that will switch between thermocouple types and linearize the readings taken with each.

These thermometers offer a resolution of 0.1° from -149.9 to 999.9°C and from -24.9 to 999.9°F. At any time, you can switch views to see all, continuously updated information on either channel. Current temperature can be shown along with the high, low or average values. The current or average differences between channels is displayed with the temperature at both probes or the high/low of the difference. A HOLD button freezes the display for easy recording. Users can set a relative temperature at each channel and then see the variance from that reference point.

HI 93552 allows auto-calibration at 0°C in a simple ice bath. HI 93552 can also store a reading, has selectable auto-off and a backlight for low light conditions. All features are performed with a single handed operation.

In addition, the HI 93552R model allows users to send the displayed measurement to a PC or printer through an RS232 serial port (once every 2 seconds).

- *Will accept K, J, T thermocouples and linearize each of the different ranges*
- *High accuracy*
- *Waterproof casing*
- *Tactile rubber keys*
- *Large dual level LCD displays high and low readings along with current temperature*
- *Battery level indicator at startup*
- *HOLD button to freeze display*
- *Low battery warning with BEPS*
- *Long battery life of 500 hours*
- *Optional rubber boots available*
- *Backlit Display (HI 93552N and HI 93552R)*
- *Calibration feature (HI 93552N and HI 93552R)*
- *PC and printer compatible (HI 93552R)*

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K, J, T-Type Printing and Logging Thermocouple Thermometers

Printing and Logging Thermometers with Computer Connection

Featuring Log-on-demand and Supports up to 4 Probes at Once

HI 98801 and HI 98804 thermometers combine on the spot printing with high accuracy and fast response time. An extensive logging feature and infrared computer transfer system are utilized for later storage, recall and study.

These meters support K, J or T-thermocouple probes, one for HI 98801 and up to 4 for HI 98804.

All stored measurements include date, time, sample and probe number. Measurements can be stored automatically at defined intervals (user-selectable from 1 to 180 minutes), or the current reading can be printed or logged-on-demand by just pressing a button.

The backlit LCD allows operations even in poorly lit areas.

PC connection is made through the HI 9200 infrared interface and serial port via HI 92000 application software to transfer all logged data.

Both models can be powered with batteries or 12 Vdc input.

HANNA produces a wide range of K-type thermocouple probes that can be used with this thermometer (HI 766 series).

- *Print an indisputable record of your measurements*
- *Selectable printing and logging intervals*
- *Connect 4 separate probes simultaneously (HI 98804)*
- *Optional computer compatibility with HANNA's HI 92000 Windows® compatible software and HI 9200/9 infrared interface cradle*



HI 710034 Paper Rolls



SPECIFICATIONS		HI 98801	HI 98804
Range	K	-200.0 to 999.9°C; 1000 to 1370°C; -300.0 to 999.9°F; 1000 to 2500°F	
	J	-200.0 to 760.0°C; -300.0 to 999.9°F; 1000 to 1400°F	
	T	-200.0 to 400.0°C; -300.0 to 750.0°F	
Resolution	K	0.1°C (-99.9 to 999.9°C); 1°C (1000 to 1370°C); 0.2°C (-200.0 to -100.0°C); 0.2°F (-199.9 to 999.9°F); 1°F (1000 to 2500°F); 0.3°F (-300.0 to -200.0°F)	
	J	0.1°C (-149.9 to 760.0°C); 0.2°C (-200.0 to -150.0°C); 0.1°F (32.0 to 999.9°F); 1°F (1000 to 1400°F); 0.2°F (-300.0 to 32.0°F)	
	T	0.1°C (-99.9 to 400.0°C); 0.2°C (-200.0 to -100.0°C); 0.1°F (300.0 to 750.0°F); 0.2°F (-149.9 to 300.0°F); 0.3°F (-300.0 to -150.0°F)	
Accuracy		±0.5°C (-200.0 to 999.9°C); ±1°C (outside); ±1°F (for 1 year, excluding probe error)	
Channels		1	4
Probe		K, J, T-type thermocouple (not included)	
Cold Junction		NTC 10 K; 0.1°C resolution; ±0.3°C accuracy	
Printer		low power impact, 14 characters per line, using 38 mm plain paper (HI 710034)	
Printing/Logging Interval		selectable at 1, 2, 5, 10, 15, 30, 60, 120 or 180 minutes	
PC Connection		HI 9200 interface through RS232 serial port and using HI 92000 software (not included)	
Power Supply		(4) 1.5V AA battery / approx. 350 hours (without printing and backlight); auto-off selectable after 5, 10, 15, 30, 45 or 60 minutes of non-use; 12 Vdc input	
Environment		0 to 50°C (32 to 122°F); RH max 95%	
Dimensions		220 x 82 x 66 mm (8.7 x 3.2 x 2.6")	
Weight		550 g (1.2 lbs.)	

ORDERING INFORMATION

HI 98801 and **HI 98804** are supplied with AA size alkaline batteries (4), instruction manual, paper rolls (5) and rugged carrying case

PROBES

HI 766C	Penetration, K-type temperature probe with 1 m cable
HI 766E1	General purpose, K-type temperature probe with 1 m cable

ACCESSORIES

HI 710005	115 Vac/12 Vdc power adapter
HI 710006	230 Vac/12 Vdc power adapter
HI 710034	Paper roll (10)
HI 710035	Ink cartridge (1)
HI 9200/9	Serial interface for PC connection
HI 92000	Windows® compatible software
HI 721317	Rugged carrying case

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HI 98701 • HI 98704

K, J, T-Type Printing Thermocouple Thermometers

Printing Thermometers



SPECIFICATIONS		HI 98701	HI 98704
Range	K	-200.0 to 999.9°C; 1000 to 1370°C; -300.0 to 999.9°F; 1000 to 2500°F	
	J	-200.0 to 760.0°C; -300.0 to 999.9°F; 1000 to 1400°F	
	T	-200.0 to 400.0°C; -300.0 to 750.0°F	
Resolution	K	0.1°C (-99.9 to 999.9°C); 1°C (1000 to 1370°C); 0.2°C (-200.0 to -100.0°C); 0.2°F (-199.9 to 999.9°F); 1°F (1000 to 2500°F); 0.3°F (-300.0 to -200.0°F)	
	J	0.1°C (-149.9 to 760.0°C); 0.2°C (-200.0 to -150.0°C); 0.1°F (32.0 to 999.9°F); 1°F (1000 to 1400°F); 0.2°F (-300.0 to 32.0°F)	
	T	0.1°C (-99.9 to 400.0°C); 0.2°C (-200.0 to -100.0°C); 0.1°F (300.0 to 750.0°F); 0.2°F (-149.9 to 300.0°F); 0.3°F (-300.0 to -150.0°F)	
Accuracy		±0.5°C (-200.0 to 999.9°C); ±1°C (outside); ±1°F (for 1 year, excluding probe error)	
Channels		1	4
Probe		K, J, T-type thermocouple (not included)	
Cold Junction		NTC 10 K; 0.1°C resolution; ±0.3°C accuracy	
Printer		low power impact, 14 characters per line, using 38 mm plain paper (HI 710034)	
Printing Interval		selectable at 1, 2, 5, 10, 15, 30, 60, 120 or 180 minutes	
Power Supply		(4) 1.5V AA battery / approx. 350 hours (without printing and backlight); auto-off selectable after 5, 10, 15, 30, 45 or 60 minutes of non-use; or 12 Vdc input	
Environment		0 to 50°C (32 to 122°F); RH max 95%	
Dimensions		220 x 82 x 66 mm (8.7 x 3.2 x 2.6")	
Weight		550 g (1.2 lbs.)	

ORDERING INFORMATION

HI 98701 and **HI 98704** are supplied with AA size alkaline batteries (4), instruction manual, paper rolls (5) and rugged carrying case

PROBES

HI 766C Penetration, K-type temperature probe with 1 m cable

HI 766D Air, K-type temperature probe with 1 m cable

HI 766E1 General purpose, K-type temperature probe with 1 m cable

ACCESSORIES

HI 710005 115 Vac/12 Vdc power adapter

HI 710006 230 Vac/12 Vdc power adapter

HI 710034 Paper roll (10)

HI 710035 Ink cartridge (1)

HI 710031 Rugged carrying case

GLP capabilty and Backlit LCD

It is often desirable to measure high temperature ranges without compromising resolution and accuracy. For this purpose, HANNA has developed the HI 98701 single channel and the HI 98704 four channel, K, J, T-type thermocouple, printing thermometers.

A built-in printer makes it possible to obtain a hard copy of your temperature measurements taken on 1, 2, 3, or even 4 channels, at selectable intervals. This means you can leave the meter unsupervised to record your readings and not have to worry about human errors in repeated, prolonged testing.

The meters incorporate the latest in GLP (Good Laboratory Practice) technology. At the touch of a button, you can retrieve the date and the details of the last calibration.

A host of default parameters are user-adjustable. For example, you can set a prompt for recalibration, or vary the auto-off settings. The low-power printer uses plain, non-fading printer paper that is widely available. For extended time measurements, the meters can be powered with 12 Vdc. The large backlit LCD allows readings from nearly any angle and in dimly lit conditions.

HANNA offers a wide range of K-thermocouple probes to meet your specific application (HI 766 series).

- *Print an indisputable record of your measurements*
- *Selectable printing intervals*
- *Connect 4 separate probes simultaneously (HI 98704)*



HI 710031 Rugged Carrying Case

HANNA instruments

With Great Products, Come Great Results™

HI 766Px Series, Probes with Detachable Handle

HI 766Px series are K-type thermocouple temperature probes to be used with thermocouple thermometers. These probes are ideal for measuring samples at very high temperatures, such as in industrial applications.

All probes are made with stainless steel for long life and easy cleaning. The HI 766Px series includes a wide range of probes for measurement of liquids, air, gas, penetration in semisolids, as well as curved, planed or hard-to-reach surfaces. In addition, models are available with interchangeable or fixed handles for maximum versatility.



HI 766HD, Probe Interchangeable Handle

A rugged, PVC handle with a 1 meter (3.3') cable. It is provided with a female connector, which allows the connection of any HI 766Px probe.

HI 766EX, Extension Cable

Coiled cable which extends by 1 meter (3.3') the probe cable, with two connectors at the two ends (1 male and 1 female).

HI 766PA, Roller Surface Probe

This probe is designed to measure the temperature of convex surfaces.

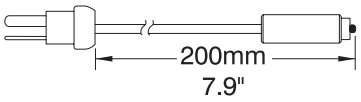


HI 766PA	
Application	convex surfaces, moving rollers
Max Temperature	320°C (600°F)
Response Time (90% of final value)	7 seconds
Probe Length	280 mm (11')
Probe	stainless steel

Seasongear
www.seasongear.com

HI 766PB, Surface Probe

Temperature probe for measurements on surfaces.





HI 766PB	
Application	hot solids, furnaces, molds
Max Temperature	650°C (1200°F)
Response Time (90% of final value)	8 seconds
Probe Dimensions	L 200 mm x dia 16 mm (7.9 x 0.6")
Probe	stainless steel

Thermometers

An introduction to HANNA Thermometers

Temperature Measurement

About Thermometers

Precise process control is one of the most important factors in maintaining high quality in production, just as precision and accuracy are the key to research. Temperature is one of the most important variables today, in research, as well as in production. Up to a few decades ago, thermometers had remained virtually unchanged. They were mainly either glass or dial/metal type.

Glass and metal thermometers use thermal expansion to measure temperature. This method uses a physical law which gives a false sense of reliability. One assumes the measurement is "true" because he or she can see how it works. This system is no longer suitable for many reasons. Their accuracy and range are very limited. The glass construction is fragile and can be dangerous to a persons health, as well as to the environment. For these reasons, an alternative way of measuring temperature has become necessary.

Electronic thermometers have provided the versatility reqyuested by operators in all areas of temperature measurement. Speed is important when reactions being monitored are changing rapidly. Small compact sensors are preferable for tightly arranged areas, such as electronics and other miniature applications. Electronic thermometers allow users to monitor maximum, minimum and even average temperatures. Mechanical stress is no longer a worry with an electronic thermometer. Field measurements can be very harsh. Rain, cold, dust and other natural obstacles are overcome with our rugged instruments.

In order to meet all the requirements users request, special care is needed. Dedicated research teams, precision process control, integrated production facilities and an overall team effort is required. HANNA has all the prerequisites necessary to accomplish this sush as local sales offices with customer assistance that respond to the customer's needs immediately and products ranging from waterproof to logging in multiple channels. HANNA's extensive professional thermometer line constitute's the true dedication HANNA commits to thermometer design and production.





Measurement Unit

Temperature is one of the most common physical properties in our everyday life. It is defined as the property of a body that determines the transfer of heat to or from other bodies. Physically, temperature affects variations in the macroscopic parameters of a body such as volume and pressure, among others.

The fundamental temperature scale is the absolute, thermodynamic or Kelvin scale. The Kelvin (K) is defined as the fraction 1/273.15 of the thermodynamic temperature of the triple point of water. The triple point of water is a standard fixed point at which ice, liquid water, and water vapor are in equilibrium.

Two empirical temperature scales are in common use: the Celsius and the Fahrenheit scales. These scales are based on two fixed points.

The Celsius (formally Centigrade) temperature scale uses the Celsius (°C) units, defined as 1/100th fraction of the difference between the temperature of boiling (100 °C) and freezing points (0 °C) of water. The relationship between the Kelvin and Celsius scales is given by:

$$K = °C + 273.15$$

The Fahrenheit scale uses Fahrenheit (°F) units, where the temperature of boiling water is taken of 212 °F, and the temperature of the freezing point at 32 °F. The scale originally used the temperature of a mixture of ice and common salt as 0 °F, and the inventor's body temperature as 96 °F. The relationship between the Fahrenheit and Celsius scales is calculated by:

$$°F = 9/5\ °C + 32$$

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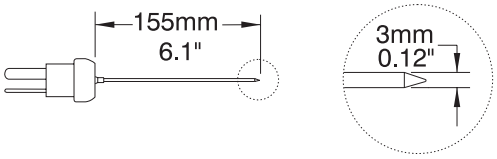
HI 766

HI 766 K-Type Thermocouple Probes



HI 766PC, Penetration Probe

K-type thermocouple probe with sharp tip for penetration of semi solid samples.

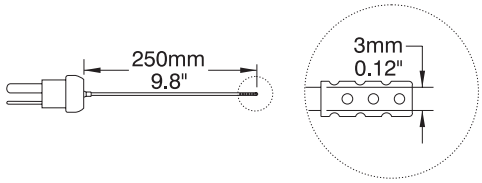


SPECIFICATIONS	HI 766PC
Application	semi solids, meat, rubber
Max Temperature	900°C (1650°F)
Response Time (90% of final value)	15 seconds
Probe Dimensions	L 155 mm x dia 3 mm (6.1 x 0.12")
Probe	stainless steel



HI 766PD, Probe for Air and Gas

K-type thermocouple probe for measuring the temperature of air and gases.

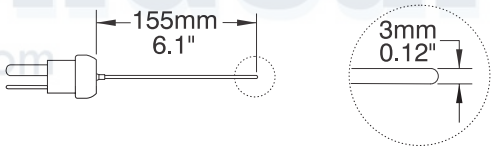


SPECIFICATIONS	HI 766PD
Application	air, gases
Max Temperature	300°C (570°F)
Response Time (90% of final value)	20 seconds
Probe Dimensions	L 250 mm x dia 3 mm (9.8 x 0.12")
Probe	stainless steel



HI 766PE1, General Purpose Probe

General purpose, penetration probe.

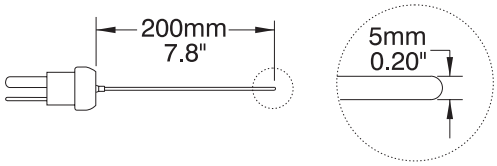


SPECIFICATIONS	HI 766PE1
Application	liquids, air, gases
Max Temperature	900°C (1650°F)
Response Time (90% of final value)	6 seconds
Probe Dimensions	L 155 mm x dia 3 mm (6.1 x 0.12")
Probe	stainless steel



HI 766PE2, General Purpose Probe

General purpose, penetration probe.



SPECIFICATIONS	HI 766PE2
Application	liquids, air, gases
Max Temperature	900°C (1650°F)
Response Time (90% of final value)	6 seconds
Probe Dimensions	L 200 mm x dia 5 mm (7.8 x 0.2")
Probe	stainless steel

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www.eseasongear.com

HI 766 K-Type Thermocouple Probes

with Integral Handle, 1 Meter (3.3') Cable and Mini-connector

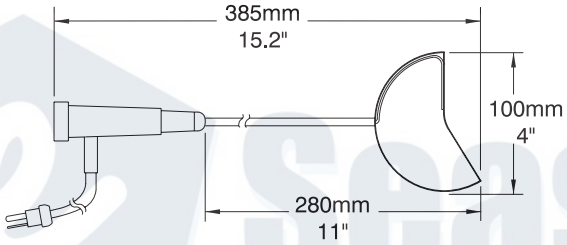


The HI 766 stainless steel probes with fixed handle, are available with different shapes to facilitate temperature measurements of various surfaces and materials.

In these pages, the whole range is presented, as well as the specific field of application of each model.

HI 766A, Roller Surface Probe

This probe is designed to measure the temperature of convex surfaces.

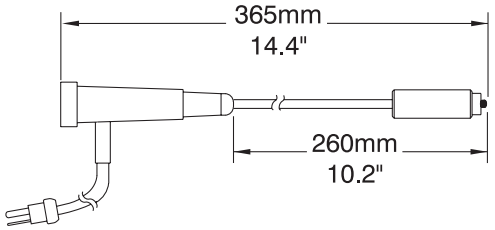




SPECIFICATIONS	HI 766A
Application	convex surfaces, moving rollers
Max Temperature	320°C (600°F)
Response Time (90% of final value)	7 seconds
Probe Length	280 mm (11')
Probe	stainless steel

HI 766B, Surface Probe

Temperature probe for measurements on surfaces.





SPECIFICATIONS	HI 766B
Application	hot solids, furnaces, molds
Max Temperature	650°C (1200°F)
Response Time (90% of final value)	8 seconds
Probe Dimensions	L 200 mm x dia 16 mm (7.9 x 0.6")
Probe	stainless steel

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HI 766

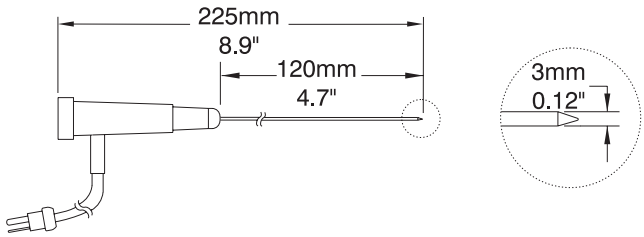
HI 766 K-Type Thermocouple Probes

with Integral Handle, 1 Meter (3.3') Cable and Mini-connector



HI 766C, Penetration Probe

K-type thermocouple probe with sharp tip for penetration of semi solid samples.

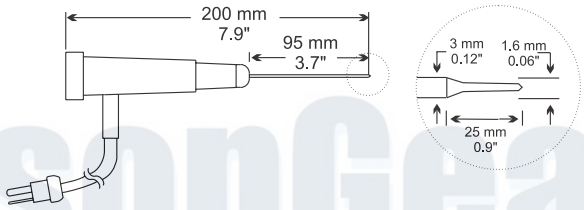


SPECIFICATIONS	HI 766C
Application	semi solids, meat, rubber
Max Temperature	900°C (1650°F)
Response Time (90% of final value)	15 seconds
Probe Dimensions	L 155 mm x dia 3 mm (6.1 x 0.12")
Probe	stainless steel



HI 766C1, Ultra-Fast Penetration Probe

Penetration probe with fast response time



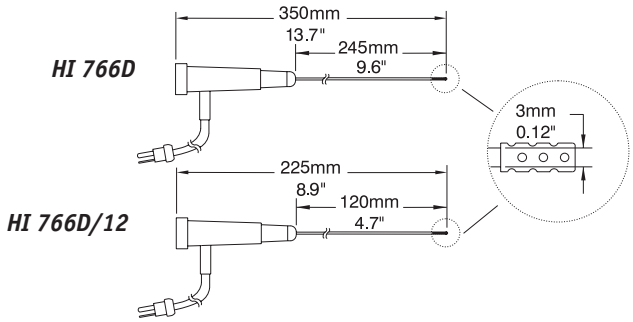
SPECIFICATIONS	HI 766C1
Application	semi solids, food
Max Temperature	300°C (570°F)
Response Time (90% of final value)	4 seconds
Probe Dimensions	L 95 mm x dia 1.6 mm (3.7 x 0.06")
Probe	stainless steel

SeasonGear
www.seasongear.com



HI 766D and HI 766D/12, Probes for Air and Gas

K-type thermocouple probe for measuring the temperature of air and gases.



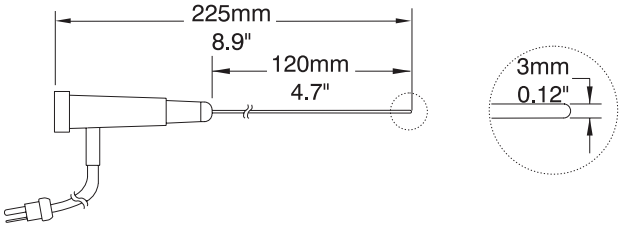
SPECIFICATIONS	HI 766D	HI 766D/12
Application	air, gases	
Max Temperature	300°C (570°F)	
Response Time (90% of final value)	20 seconds	
Dimensions	L 245 mm x dia 3 mm (9.6 x 0.12")	L 120 mm x dia 3 mm (4.7 x 0.12")
Probe	stainless steel	

HI 766 K-Type Thermocouple Probes

with Integral Handle, 1 Meter (3.3') Cable and Mini-connector

HI 766E1, General Purpose Probe

General purpose, penetration probe.

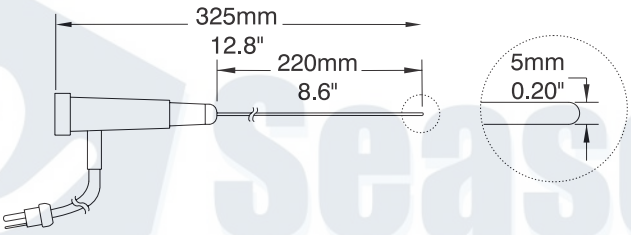




SPECIFICATIONS	HI 766E1
Application	liquids, air, gases
Max Temperature	900°C (1650°F)
Response Time (90% of final value)	6 seconds
Probe Dimensions	L 120 mm x dia 3 mm (4.7 x 0.12")
Probe	stainless steel

HI 766E2, General Purpose Probe

General purpose, penetration probe

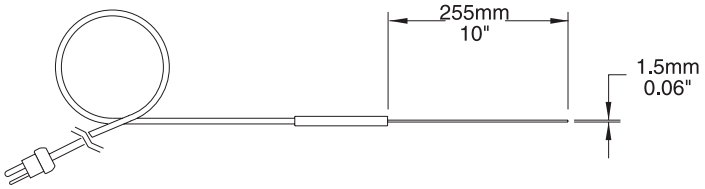




SPECIFICATIONS	HI 766E2
Application	liquids, air, gases
Max Temperature	900°C (1650°F)
Response Time (90% of final value)	6 seconds
Probe Dimensions	L 220 mm x dia 5 mm (8.5 x 0.2")
Probe	stainless steel

HI 766F, High Temperature Probe

Probe with flexible sheath without handle, designed to measure high temepratures.





SPECIFICATIONS	HI 766F
Application	high temperature
Max Temperature	1100°C (2000°F)
Response Time (90% of final value)	4 seconds
Probe Dimensions	L 255 mm x dia 1.5 mm (10 x 0.06")
Probe	stainless steel AISI 316

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HI 766

HI 766 K-Type Thermocouple Probes

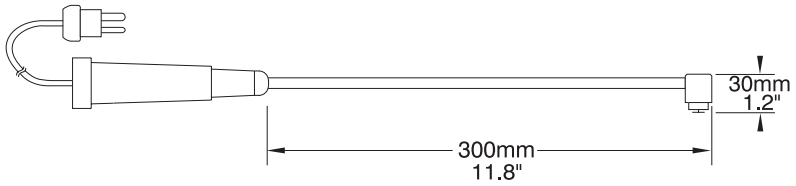
for Specific Applications

These probes are designed to ensure optimal contact with surfaces of different shapes and dimensions.

When using these probes, the handle temperature must never exceed 150°C (302°F), to avoid possible damage to the probe.

HI 766B1, 90° Angle Surface Probe

Probe for measuring the temperature of 90° angle surfaces.

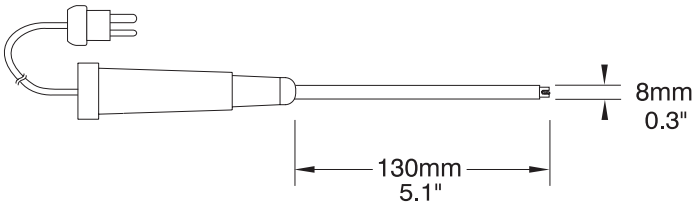




SPECIFICATIONS	HI 766B1
Application	hard-to-reach surfaces
Max Temperature	450°C (840°F)
Response Time (63.2% F.S.)	8 seconds
Probe Length	300 mm (11.8")
Probe	stainless steel
Sensor	spring-loaded

HI 766B2, Surface Probe

Probe for measuring the temperature of round surfaces.





SPECIFICATIONS	HI 766B2
Application	solids, furnaces, molds
Max Temperature	900°C (1650°F)
Response Time (63.2% F.S.)	3 seconds
Probe Dimensions	L 130 mm x dia 8 mm (5.1 x 0.3")
Probe	stainless steel
Sensor	spring-loaded

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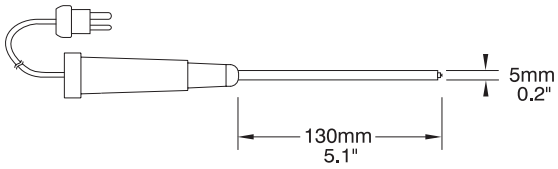
HI 766 K-Type Thermocouple Probes

for Specific Applications

HI 766B3, Small Surface Probe

Probe for measuring the temperature of small surfaces.

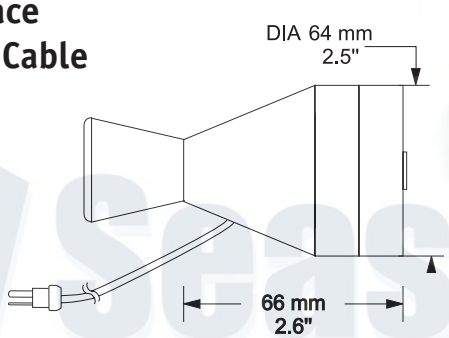




SPECIFICATIONS	HI 766B3
Application	small surfaces
Max Temperature	200°C (390°F)
Response Time (63.2% F.S.)	6 seconds
Probe Dimensions	L 130 mm x dia 5 mm (5.1 x 0.2")
Probe	stainless steel, insulated tube
Sensor	spring-loaded

HI 766B4, Grill Surface Probe with Jacketed Cable

Probe for measuring the temperature of hot grill surfaces.



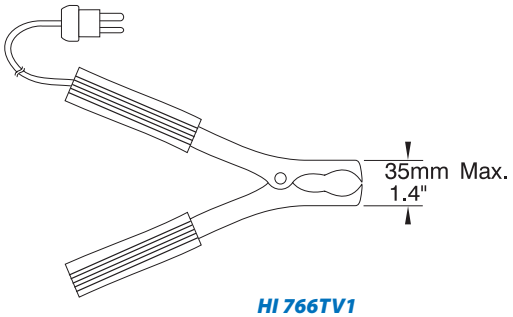




SPECIFICATIONS	HI 766B4
Application	hot grills for food cooking
Max Temperature	250°C (482°F)
Response Time (63.2% F.S.)	6 seconds
Probe Dimensions	L 66 mm x dia 64 mm (2.6 x 2.5")
Sensor	Teflon® contact surface with replaceable stainless steel sensor (HI 7664B4S)
Cable	70 cm (27.6") length, protected with stainless steel jacket

HI 766TV1, Pipe Clamp Probe

Probe for measuring the temperature of pipes and tubes.





SPECIFICATIONS	HI 766TV1
Application	pipes, tubes
Max Temperature	200°C (390°F)
Response Time (63.2% F.S.)	8 seconds
Clamp Opening Diameter	max 35 mm (1.4")
Sensor	housed inside the clamp

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HI 766

HI 766 K-Type Thermocouple Probes

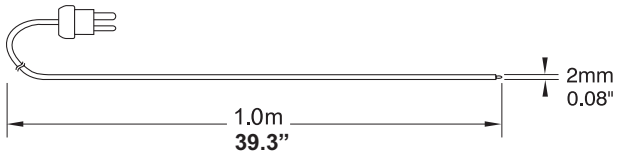
for Specific Applications

HI 766F1, Wire Temperature Probe

Wire probe, designed to access hard-to-reach places.

Probe does not incorporate a handle.



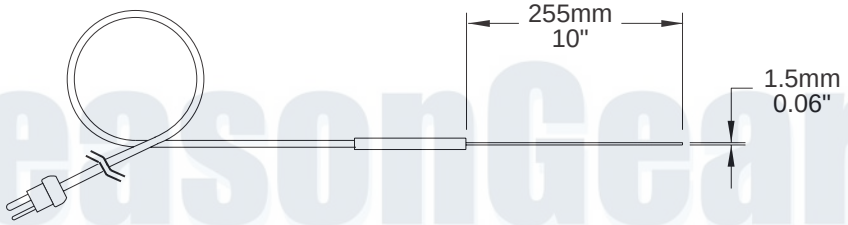


SPECIFICATIONS	HI 766F1
Application	hard to reach areas
Max Temperature	480°C (900°F)
Response Time (63.2% F.S.)	1 second
Wire Length	1 m (3.3’)
Probe Dimensions	dia 2 mm (0.08”)
Sensor	exposed wires

HI 766Z, Wire Temperature Probe

Wire probe, designed to measure temperature inside ovens.



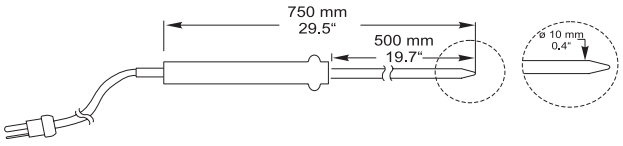


SPECIFICATIONS	HI 766Z
Application	ovens
Max Temperature	1100°C (2000°F)
Response Time (90% of final value)	4 seconds
Wire Length	1.7 m (5.6’)
Probe Dimensions	L 255 mm x dia 1.5 mm (10 x 0.06”)
Sensor	stainless steel

HI 766TR1, Penetration Probe

K-type thermocouple probe with sharp tip for penetration of semi solid samples.





SPECIFICATIONS	HI 766TR1
Application	semi solids, liquids
Max Temperature	250°C (482°F)
Response Time (90% of final value)	10 seconds
Probe Dimensions	L 500 mm x dia 10 mm (19.7 x 0.4”)
Sensor	stainless steel

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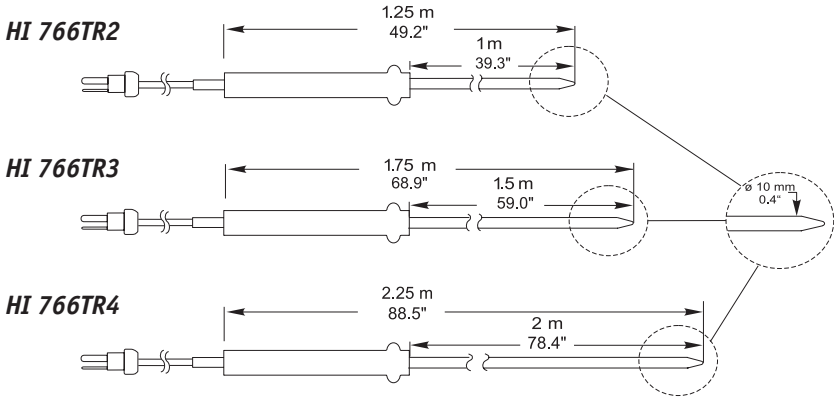
HI 766 K-Type Thermocouple Probes

for Specific Applications

HI 766TR2, HI 766TR3, HI 766TR4, Penetration Probes

K-type thermocouple probes with sharp tip for penetration of semi solid samples.





HI 766TR2, HI 766TR3, HI 766TR4

Application	semisolids, liquids
Max Temperature	250°C (482°F)
Response Time (90% of final value)	10 seconds
Probe Length	HI 766TR2: 1 m / HI 766TR3: 1.5 m / HI 766TR4: 2 m
Probe	stainless steel



HI 766 Series of K-Type Temperature Probes

HI 766A	Roller surface probe with integral handle and 1 m (3.3') cable
HI 766B	Surface probe with integral handle and 1 m (3.3') cable
HI 766B1	90° angle surface probe with integral handle and 1 m (3.3') cable
HI 766B2	Surface probe with integral handle and 1 m (3.3') cable
HI 766B3	Small surface probe with integral handle and 1 m (3.3') cable
HI 766B4	Grill surface probe with 1 m (3.3') cable
HI 766C	Penetration probe with integral handle and 1 m (3.3') cable
HI 766C1	Ultra-fast penetration probe with integral handle and 1 m (3.3') cable
HI 766D	Air/gas probe with integral handle and 1 m (3.3') cable; probe length of 24.5 cm
HI 766D/12	Air/gas probe with integral handle and 1 m (3.3') cable; probe length of 12 cm
HI 766E1	General purpose probe with integral handle and 1 m (3.3') cable; length of 12 cm
HI 766E2	General purpose probe with integral handle and 1 m (3.3') cable; length of 22 cm
HI 766EX	Coiled extension cable to add 1 m length to the probe cable; provided with thermocouple connectors (a male at one end and a female at the other). Can be used with any K-type thermocouple thermometer.
HI 766F	High temperature probe with flexible sheath
HI 766F1	Wire probe, 1 m (3.3')
HI 766PA	Roller surface probe without handle
HI 766PB	Surface probe without handle
HI 766PC	Penetration probe without handle
HI 766PD	Air/gas probe without handle
HI 766PE1	General purpose probe without handle; probe length of 15.5 cm
HI 766PE2	General purpose probe without handle; probe length of 20 cm
HI 766TR1	Penetration probe with integral handle; probe length of 0.50 m
HI 766TR2	Penetration probe with integral handle; probe length of 1 m
HI 766TR3	Penetration probe with integral handle; probe length of 1.5 m
HI 766TR4	Penetration probe with integral handle; probe length of 2 m
HI 766TV1	Pipe clamp probe with 1 m (3.3') cable
HI 766Z	Wire probe for ovens







www.reasongear.com

HI 93510 • HI 93510N

Thermistor Thermometers

Waterproof with Interchangeable Probes

hold | lcd display | B.E.P.S. | backlight | cal 0°C | min/max



HI 762 Test Keys

Ideal for Lab and Field Use

HI 93510 is a high performance, waterproof thermometer tailor-made for lab and field use. This precision instrument features new electronics to provide the user with unsurpassed accuracy and repeatability across the entire measuring range.

HI 93510 is designed for ease of operation. The dual-level LCD displays the highest and lowest readings in the cycle along with the current temperature. To freeze the reading for easy recording, simply press the HOLD button. Celsius or Fahrenheit range can be selected at the touch of a button. Battery level is shown at startup and a low battery warning with BEPS (Battery Error Prevention System) assures long periods of trouble free use.

For extreme accuracy or dimly lit areas, select the HI 93510N. This meter offers all the features of HI 93510 plus a CAL button to allow the operator to calibrate the meter and probe in an ice bath at 0°C. This will assure the removal of the combined meter and probe interchange error. In addition to calibration capabilities, HI 93510N features a user-activated backlight for low or no light conditions.

A wide range of HI 762 probes is available for specific applications.

- *Waterproof casing with ergonomic design*
- *Tactile rubber keys*
- *High accuracy + 0.4°C/ + 0.8°F*
- *Large dual level LCD displays high and low readings along with current temperature*
- *Battery level indicator at startup*
- *Low battery warning with BEPS*
- *Exceptionally long battery life of 2000 hours*
- *Supplied with HI 762BL general purpose probe*
- *Optional rubber boots available*
- *Calibration test plugs available*
- *Backlit Display (HI 93510N)*
- *Calibration feature (HI 93510N)*

SPECIFICATIONS	HI 93510	HI 93510N
Range	-50.0 to 150.0°C; -58.0 to 302.0°F	
Resolution	0.1°C; 0.1°F (-58.0 to 230.0°F) and 0.2°F (outside)	
Accuracy	±0.4°C; ±0.8°F (for 1 year, excluding probe error)	
Probe	I 762BL stainless steel probe with 1 m (3.3') cable (included)	
CAL Button	N/A	Yes
Backlit LCD	N/A	Yes
Battery Type / Life	(3) 1.5V AA / approx. 2000 hours of continuous use (with backlight off); HI 93510 only: auto-off selectable after 8 or 60 minutes of non-use (can be disabled)	
Environment	-10 to 50°C (14 to 122°F); RH max 100%	
Dimensions	150 x 80 x 36 mm (5.9 x 3.1 x 1.4")	
Weight	235 g (8.3 oz.)	

ORDERING INFORMATION

HI 93510 and **HI 93510N** are supplied with temperature probe, alkaline batteries (3) and instruction manual.

PROBES

HI 762BL General purpose/liquid temperature probe with 1 m cable

HI 762L/10 General purpose/liquid temperature probe with 10 m cable

ACCESSORIES

HI 762-18C Test key at -18.0°C
HI 762000C Test key at 0.0°C
HI 762070C Test key at 70.0°C
HI 710007 Shockproof rubber boot, blue
HI 710008 Shockproof rubber boot, orange
HI 710019 Spare protective case

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Thermistor Thermometers

Waterproof with 2-Channels

Monitor 2 Samples at the Same Time

HI 93512 is a waterproof two-channel thermometer, ideal for monitoring two samples at once. This easy-to-use thermometer displays the high and low readings together with temperature.

HI 93512 allows the user to view the differences between each channel (along with the high and low difference values or current temperature at each probe), as well as the variance from a reference temperature. The HOLD button allows users to freeze a reading. This powerful instrument enables you to switch views to see all continuously updating information on either channel. HI 93512 can be configured to read °C or °F. Battery level is shown at startup and low battery warning with Battery Error Prevention System (BEPS) assure long periods of trouble free use.

HI 93522 is an advanced instrument offering all the features of HI 93512 and much more. For even greater accuracy, a CAL button allows the operator to remove the combined meter and probe interchange error in an ice bath at 0°C.

HI 93522 can also store and recall a reading, allows the user to set the auto-off time period and activate the backlight for low light conditions.

- *Waterproof casing with ergonomic design*
- *Tactile rubber keys*
- *High accuracy + 0.4°C/ + 0.8°F*
- *Large dual level LCD displays high and low readings along with current temperature*
- *Battery level indicator at startup*
- *Low battery warning with BEPS*
- *Exceptionally long battery life of 2000 hours*
- *Supplied with HI 762BL general purpose probe*
- *Optional rubber boots available*
- *Calibration test plugs available*
- *Backlit Display (HI 93522)*
- *Calibration feature (HI 93522)*



HI 762 Test Keys

Seasonstar
www.seasonstar.com

SPECIFICATIONS	HI 93512	HI 93522
Range	-50.0 to 150.0°C; -58.0 to 302.0°F	
Resolution	0.1°C; 0.1°F (-58.0 to 230.0°F) and 0.2°F (outside)	
Accuracy	±0.4°C; ±0.8°F (for 1 year, excluding probe error)	
Probe	HI 762BL, precalibrated, stainless steel, with 1 m (3.3') cable (included)	
CAL Button	N/A	Yes
Backlit LCD	N/A	Yes
Battery Type / Life	(3) 1.5V AA / approx. 2000 hours of continuous use (with backlight off); HI 93522 only: auto-off selectable after 8 or 60 minutes of non-use (can be disabled)	
Environment	-10 to 50°C (14 to 122°F); RH max 100%	
Dimensions	150 x 80 x 36 mm (5.9 x 3.1 x 1.4")	
Weight	235 g (8.3 oz.)	

ORDERING INFORMATION

HI 93512 and **HI 93522** are supplied with temperature probe, 1.5V AA alkaline batteries (3) and instruction manual.

PROBES

HI 762BL	General purpose/liquid temperature probe with 1 m cable
HI 762L/10	General purpose/liquid temperature probe with 10 m cable

ACCESSORIES

HI 762-18C	Test key at -18.0°C
HI 762000C	Test key at 0.0°C
HI 762070C	Test key at 70.0°C
HI 710007	Shockproof rubber boot, blue
HI 710008	Shockproof rubber boot, orange
HI 710019	Spare protective case

Thermometers

An introduction to HANNA Thermometers

Thermometer Accuracy

As previously described, modern technology has made it possible to produce, at a reasonable cost, electronic thermometers that use various principles and measurement sensors.

With digital indicators it is easy to show resolutions of 0.1°C. There is no relationship between resolution and accuracy of measurements.

Here is a list of the main causes of errors in temperature measuring systems:

- *Instrument:* The instrument may have an extended scale and 19,000 points of measurement may be obtained. Within these 19,000 points the instrument may perform differently because of internal linearity.
- *Electronic Components:* The internal electronics have a drift that depends on the ambient temperature. For this reason the accuracy of the instrument is stated at a specific temperature of 20 or 25°C, and the drift has to be specified for each degree of variations with respect to the reference temperature.
- *LCD:* Liquid crystals have an operating limitation which is a function of temperature. Their normal range is between 0 and 50°C, but there are components capable of performing between -20°C and +70°C.
- *Batteries:* Instrument battery power supply also has limitations of use.
- *Temperature Sensor:* This is a separate accuracy, which is to be added to the instrument's error.

These examples indicate the various errors (which contribute to define) and therefore guarantee the accuracy of the instrument.

If the probe is supplied connected to the meter, during factory calibration the probe error is eliminated. It will reappear if the probe is replaced.

User Calibration

To calibrate your thermometers you need:

- *for Pt100 thermometers: a resistance simulator*
- *for thermometers with NTC/PTC sensor: at least two thermostatic baths*
- *for thermocouple thermometers: a simulator of the emf (electromotive force) generated by the thermocouple*
- *for infrared thermometers, a heat source (panel) at controlled temperature*

Few users can afford this investment in time and materials for checking their thermometers' accuracy.

Importance of accuracy in temperature readings

Up to a few years ago, accuracy was not a very critical aspect and tolerances of a few °C did not jeopardize a process. From the time that HACCP programs became a necessity, measurement accuracy has become a discriminating factor. Due to health risk factors, now an error of a few tenths of a degree can decide whether food can still be kept or must be discarded. In 1990, HANNA began to produce thermometers for our customer's HACCP programs to comply with new European regulations. Soon after, HANNA became the market leader in Europe as a result of the technological solutions offered to our users in need of accuracy.



CAL CHECK™ Feature

As previously described, the electronic components of an instrument shift with time. HANNA has made it possible for the user, with the simple touch of a button, to verify whether the response of the instrument is within the tolerance limit of ±0.02°C.

The CAL CHECK™ system acts by substituting the sensor with an internal resistor, which corresponds to 0°C, and thus simulating the response that the temperature probe would have at 0°C.

Standardization

HANNA has designed a series of pre-calibrated temperature probes with a maximum error of 2°C for trouble free replacement.

Calibration of Thermocouple Thermometers

Although quite fast, thermocouple thermometers read with a response time much slower than other sensors and other technologies. Unfortunately, the measurement of the thermocouple emf (electromotive force) loses accuracy because of the measuring system itself, based on the emf generated by the temperature difference between cold and hot junctions. The same emf may be generated under different conditions:

- *hot junction at 100°C; cold junction at 20°C; difference: 80°C* or:
- *hot junction at 90°C; cold junction at 10°C; difference: 80°C*

So that a temperature difference of 80°C is obtained with two

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HI 98811

Printing and Logging Thermistor Thermometer

with Fast Tracker™—Tag Identification System



- *Lab-grade precision*
- *BEPS—Battery Error Prevention System*
- *Lightweight, rugged housing*

FastTracker™
A new revolution in organized data management

SPECIFICATIONS	HI 98811
Range	-50.0 to 150.0°C; -55.0 to 300.0°F
Resolution	0.1°C (-30.0 to 130°C); 0.2°C (outside); 0.1°F (-18 to 225°F); 0.2°F (225 to 260°F); 0.3°F (outside)
Accuracy	±0.4°C (-20 to 120°C); ±0.7°C (outside); ±0.8°F (-4 to 248°F); 1.3°F (outside) (for 1 year, excluding probe error)
Probe	HI 762BL (included)
Printer	low power impact, 14 characters per line, using 38 mm plain paper (HI 710034)
Printing/Logging Interval	selectable at 1, 2, 5, 10, 15, 30, 60, 120 or 180 minutes
PC Connection	HI 9200 IR interface through RS232 serial port and using HI 92000 software (not included)
Power Supply	(4) 1.5V AA alkaline type/350 hours typical life (with 2700 mA/h batteries, without printing and backlight). 12 VDC adapter (HI 710005 or HI 710006)
Environment	0 to 50°C (32 to 122°F); RH max 95%
Dimensions	220 x 82 x 66 mm (8.7 x 3.2 x 2.6")
Weight	550 g (1.2 lbs.)

ORDERING INFORMATION

HI 98811 is supplied with HI 762BL temperature probe with 1 m cable, paper rolls (5), (4) batteries, rugged carrying case and instructions.

PROBES

HI 762L/10	General purpose/liquid temperature probe with 10 m cable

ACCESSORIES

HI 920005	iButton® with holder (5)
HI 710005	115 Vac/12 Vdc power adapter
HI 710006	230 Vac/12 Vdc power adapter
HI 710034	Paper roll (10)
HI 710035	Ink cartridge
HI 9200/9	Serial IR interface for PC connection
HI 92000	Windows® compatible software
HI 710031	Rugged carrying case

Features Fast Tracker™—Tag Identification System

The HANNA portable NTC Fast Tracker™ thermometer with built-in printer enables you to accurately measure and record both temperature and sample identification data. The meter features an easy-to-read LCD with backlight feature for comfortable reading even in dark environments. A user friendly interface provides clear messages regarding errors, functions and more.

The Sample Identification feature eliminates the necessity of manual identification for different measurement results to reduce human errors. An alarm time-out is available to alert the user if more than one year has elapsed since the last calibration and that recalibration may be required.

GLP features guarantee data consistency and provides GLP settings through a password protection method.

HI 98811 has the capability to store the measurements in memory at a user selectable interval from 1 to 180 minutes. This information can be retrieved at a later time and can also be printed.

Each measurement/lot can be uniquely identified by assigning a sample ID code obtained by reading from a Dallas iButton® tag (DS1990A, etc) placed in the field.

HI 98811 also allows the transfer of stored data to a computer via the HI9200/9 infrared transmitter connected to the computer RS232 port.

Each meter can also be uniquely identified by the user by assigning an instrument ID code.



HANNA instruments

With Great Products, Come Great Results™

Printing and Logging Thermistor Thermometers

Printing and Logging Thermometers with Log-on-demand

HI 98810 and HI 98840 combine high accuracy and fast response time with an extensive logging feature and an infrared computer transfer system. All stored measurements are correlated with time, date, sample and probe number.

The log-on-demand function is activated by simply pressing one button. When logging automatically, the user can select a time interval from 1 to 180 minutes.

All logged data can be transferred to a PC via HANNA's HI 9200/9 infrared interface cradle connected to the computer serial port. The connection is handled with the HI 92000 Windows® compatible software designed by HANNA.

The large backlit LCD allows readings in dimly lit conditions. These instruments can be powered with batteries or with a 12 Vdc supply.

HI 98810 accepts one temperature probe while HI 98840 can be connected to 4 separate probes at the same time.

HI 98810 is supplied with an HI 762BL temperature probe (for general purpose liquid measurements). Both models use the HI 762 series of thermistor probes by HANNA.

- *Print an indisputable record of your measurements*
- *Selectable printing and logging intervals*
- *Connect 4 separate probes simultaneously (HI 98840)*
- *Optional computer compatibility with HANNA's HI 92000 compatible Windows® software and HI 9200 infrared interface cradle*



SPECIFICATIONS	HI 98810	HI 98840
Range	-50.0 to 150.0°C; -55.0 to 300.0°F	
Resolution	0.1°C (-30.0 to 130°C); 0.2°C (outside); 0.1°F (-18 to 225°F); 0.2°F (225 to 260°F); 0.3°F (outside)	
Accuracy	±0.4°C (-20 to 120°C); ±0.7°C (outside); ±0.8°F (-4 to 248°F); 1.3°F (outside) (for 1 year, excluding probe error)	
Channels	1	4
Probe	HI 762BL (included)	HI 762 series (not included)
Printer	low power impact, 14 characters per line, using 38 mm plain paper (HI 710034)	
Printing/Logging Interval	selectable at 1, 2, 5, 10, 15, 30, 60, 120 or 180 minutes	
PC Connection	HI 9200 interface through RS232 serial port and using HI 92000 software (not included)	
Power Supply	(4) 1.5V AA battery / approx. 350 hours (without printing and backlight); auto-off selectable after 5, 10, 15, 30, 45 or 60 minutes of non-use; or 12 Vdc input	
Environment	0 to 50°C (32 to 122°F); RH max 95%	
Dimensions	220 x 82 x 66 mm (8.7 x 3.2 x 2.6")	
Weight	550 g (1.2 lbs.)	

ORDERING INFORMATION

HI 98810 and **HI 98840** are supplied with HI762BL temperature probe (one channel version only), batteries (4), instruction manual, paper rolls (5) and rugged carrying case.

PROBES

HI 762BL	General purpose/liquid temperature probe with 1 m cable
HI 762L/10	General purpose/liquid temperature probe with 10 m cable

ACCESSORIES

HI 762-18C	Test key at -18.0°C
HI 762000C	Test key at 0.0°C
HI 762070C	Test key at 70.0°C
HI 710005	115 Vac/12 Vdc power adapter
HI 710006	230 Vac/12 Vdc power adapter
HI 710034	Paper roll (10)
HI 710035	Ink cartridge
HI 9200/9	Serial IR interface for PC connection
HI 92000	Windows® compatible software
HI 710031	Rugged carrying case



HI 710035 Ink Cartridge

Windows® is registered Trademark of "Microsoft Co."

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HI 98710 • HI 98740

Printing Thermistor Thermometers

with 1 or 4 Channels



Economical Printing Thermometers with Backlit LCD

For applications requiring documentation and high precision, HI 98710 and HI 98740 are the perfect solution. The advanced HANNA electronics inside these thermometers linearizes measurements taken with the NTC thermistor sensor.

These portable instruments are supported with large backlit displays to permit use in dimly lit conditions. The meters incorporate the latest in GLP (Good Laboratory Practice) technology. At the touch of a button, you can retrieve the date and the details of the last calibration. A host of default parameters are user-adjustable.

HI 98710 is a single channel unit, while HI 98740 can incorporate up to 4 temperature probes. Printing intervals are user-selectable from 1 to 180 minutes. If more than one probe is in use, the printer will label the data of each probe.

The interchangeable HI 762 sensors come pre-selected with a maximum inter-changeability error of ±0.2°C. The probe handles are color coded also to avoid cross contamination of samples, an important plus in the food sector.

Both models can be powered with batteries or through the 12 Vdc input.

- *Print an indisputable record of your measurements*
- *Selectable printing intervals*
- *Connect 4 separate probes simultaneously (HI 98740)*

SPECIFICATIONS	HI 98710	HI 98740
Range	-50.0 to 150.0°C; -55.0 to 300.0°F	
Resolution	0.1°C (-30.0 to 130°C); 0.2°C (outside); 0.1°F (-18 to 225°F); 0.2°F (225 to 260°F); 0.3°F (outside)	
Accuracy	±0.4°C (-20 to 120°C); ±0.7°C (outside); ±0.8°F (-4 to 248°F); ±1.3°F (outside) (for 1 year, excluding probe error)	
Channels	1	4
Probe	HI 762BL (included)	HI 762 series (not included)
Printer	low power impact, 14 characters per line, using 38 mm plain paper (HI 710034)	
Printing Interval	selectable at 1, 2, 5, 10, 15, 30, 60, 120 or 180 minutes	
Power Supply	(4) 1.5V AA battery / approx. 350 hours (without printing and backlight); auto-off selectable after 5, 10, 15, 30, 45 or 60 minutes of non-use; or 12 Vdc input	
Environment	0 to 50°C (32 to 122°F); RH max 95%	
Dimensions	220 x 82 x 66 mm (8.7 x 3.2 x 2.6")	
Weight	550 g (1.2 lbs.)	

ORDERING INFORMATION

HI 98710 and **HI 98740** are supplied with HI762BL temperature probe (one channel version only), AA size alkaline batteries (4), instruction manual, paper rolls (5) and rugged carrying case.

PROBES

HI 762BL General purpose/liquid temperature probe with 1 m cable

HI 762L/10 General purpose/liquid temperature probe with 10 m cable

ACCESSORIES

HI 762-18C Test key at -18.0°C

HI 762000C Test key at 0.0°C

HI 762070C Test key at 70.0°C

HI 710005 115 Vac/12 Vdc power adapter

HI 710006 230 Vac/12 Vdc power adapter

HI 710034 Paper roll (10)

HI 710035 Ink cartridge (1)

HI 721317 Rugged carrying case



HI 710034 Paper Rolls

HANNA instruments

With Great Products, Come Great Results™

Ideal for Wet and Humid Environments

The waterproof HI 9060 thermistor thermometer is ideal for use in wet and humid environments. This popular instrument is configured with a dual-level LCD that shows the current temperature simultaneously with the high and low session extremes. A HOLD button allows easy recording of the current information on display.

The waterproof HI 9060 uses a thermistor sensor for measuring the temperature in a range from -50 to 150°C and -58 to 302°F.

Toggle between degrees Celsius and degrees Fahrenheit, simply by pushing the °C/°F button.

This rugged instrument offers a new level of portability with an increase in battery life to 3000 hours! That means the instrument will work up to 8 hours a day, seven days a week for over a year. At startup, the thermometer performs a self test and displays the remaining battery power.

HANNA produces a complete range of interchangeable HI 765 probes to meet all of your application needs.

- *HOLD button freezes readings on the display*
- *Switch between °C and °F at the touch of a button*
- *Battery life on display*
- *3000 hour battery life*



eSeasonGear
www.eseasongear.com

SPECIFICATIONS	HI 9060
Range	-50.0 to 150.0°C; -58.0 to 302.0°F
Resolution	0.1°C; 0.1°F
Accuracy	±0.4°C; ±0.8°F (for 1 year, excluding probe error)
Probe	HI 765BL, stainless steel, with 1 m (3.3') cable (included)
Battery Type / Life	(4) 1.5V AA / approx. 3000 hours of continuous use
Environment	-10 to 50°C (14 to 122°F); RH max 100%
Dimensions	196 x 80 x 60 mm (7.7 x 3.1 x 2.4")
Weight	500 g (1.1 lbs.)



HI 765 Test Keys

ORDERING INFORMATION

HI 9060 is supplied with HI 765BL temperature probe, batteries (4) and instruction manual.

PROBES

HI 765BL General purpose/liquid temperature probe with 1 m cable

HI 765L/10 General purpose/liquid temperature probe with 10 m cable

ACCESSORIES

HI 765-18C Test key at -18.0°C

HI 765000C Test key at 0.0°C

HI 765070C Test key at 70.0°C

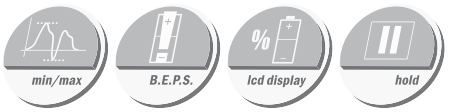
HI 710021 Spare protective case

HI 721317 Rugged carrying case

HI 9040

Thermistor Thermometer

High Accuracy, Fast Response Thermometer





Rugged Thermistor Thermometer

HI 9040 is a hand-held thermometer that uses a thermistor sensor to deliver fast response and high accuracy.

The meter is housed in a rugged ABS casing for maximum protection. The smooth keypad with membrane buttons will easily wipe clean. The dual-level LCD allows the display of current temperature simultaneously with the highest and lowest temperature measured in the cycle.

The °C/°F button switches between the Celsius and Fahrenheit ranges instantly and a HOLD button will guarantee the user plenty of time to record the readings.

During startup, this meter performs a self check and displays the current battery level.

HI 9040 is supplied with an HI 765BL thermistor probe.

A wide variety of HI 765 probes for applications such as air, liquid and penetration are available.

- *HOLD button freezes readings on the display*
- *View Hi, Low and Current Reading Simultaneously*
- *Switch between °C and °F at the touch of a button*
- *Battery life on display*

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SPECIFICATIONS	HI 9040
Range	-50.0 to 150.0°C; -58.0 to 302.0°F
Resolution	0.1°C; 0.1°F
Accuracy	±0.4°C; ±0.8°F (for 1 year, excluding probe error)
Probe	HI 765BL, precalibrated, stainless steel, with 1 m (3.3') cable (included)
Battery Type / Life	(1) 9V / approx. 700 hours of continuous use
Environment	-10 to 50°C (14 to 122°F); RH max 95%
Dimensions	180 x 83 x 40 mm (7.1 x 3.3 x 1.6")
Weight	226 g (8.0 oz.)

ORDERING INFORMATION

HI 9040 is supplied with HI 765BL thermistor probe, 9V battery and instruction manual.

PROBES

HI 765BL	General purpose/liquid temperature probe with 1 m cable
HI 765L/10	General purpose/liquid temperature probe with 10 m cable
HI 765PW	Penetration temperature probe with 1 m cable

ACCESSORIES

HI 765-18C	Test key at -18.0°C
HI 765000C	Test key at 0.0°C
HI 765070C	Test key at 70.0°C
HI 710009	Shockproof rubber boot, blue
HI 710010	Shockproof rubber boot, orange
HI 710020	Spare protective case
HI 721316	Rugged carrying case



HI 721316 Rugged Carrying Case

HANNA instruments

With Great Products, Come Great Results™

Digital Thermometers

for Education

Ideal for Classrooms or out in the Field

Temperature measurements in the low ranges (-40 to 150°C or -58 to 338°F) are usually performed with thermometers that use the physical expansion of liquids such as in glass and dial thermometers. In terms of accuracy, these thermometers usually read within ±1 to ±5°C (±2 to ±9°F) of the actual temperature. In order to achieve higher accuracy, the range must be reduced or the length of the thermometer must be increased. The HI 8751, HI 8752 and HI 8753 electronic thermistor thermometers resolve these problems.

These thermometers use a miniature silicon sensor and are pre-calibrated at the factory to measure a wide temperature range without the need to change probes. This type of sensor is highly accurate with a very fast response time. The sensor is housed in a rugged, stainless steel probe. This probe can be replaced without requiring recalibration.

A wide variety of interchangeable temperature probes (HI 765 series) for measurements in liquid, air and semi-solids are available.

- *Simple to operate*
- *Wide range of probes available*
- *3 Models to choose from*



SeasonGear
www.eseasongear.com

SPECIFICATIONS	HI 8751	HI 8752	HI 8753
Range	-40.0 to 150.0°C	-58 to 338°F	-40.0 to 150.0°C; -58 to 338°F
Resolution	0.1°C	1°F	0.1°C; 1°F
Accuracy	±0.5% F.S. (for 1 year, excluding probe error)		
Probe	HI 765PW	HI 765BL	HI 765BL
	precalibrated, stainless steel, with 1 m (3.3') cable (included)		
Battery Type / Life	(1) 9V / approx. 300 hours of continuous use		
Environment	0 to 50°C (32 to 122°F); RH max 95%		
Dimensions	180 x 83 x 40 mm (7.1 x 3.3 x 1.6")		
Weight	265 g (9.3 oz.)		



HI 765 Test Keys



HI 710002 Soft Carrying Case

ORDERING INFORMATION

HI 8751, **HI 8752** and **HI 8753** are supplied with precalibrated and interchangeable HI 765BL temperature probe, 9V battery and instruction manual.

PROBES

HI 765BL General purpose/liquid temperature probe with 1 m cable

HI 765L/10 General purpose/liquid temperature probe with 10 m cable

HI 765PW Penetration temperature probe with 1 m cable

ACCESSORIES

HI 765-18C Test key at -18.0°C

HI 765000C Test key at 0.0°C

HI 765070C Test key at 70.0°C

HI 710009 Shockproof rubber boot, blue

HI 710010 Shockproof rubber boot, orange

HI 710002 Soft carrying case

HI 721316 Rugged carrying case

HI 762

HI 762 Thermistor Probes









The HI 762 temperature probes can be identified by the grey cap on the top of the handle and have the following specifications:

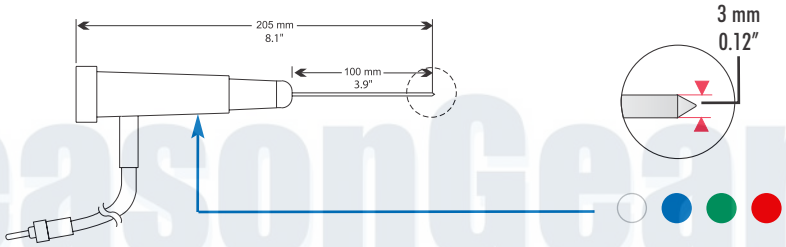
Range	-50 to 150°C (-58 to 302°F)
Sensor	NTC thermistor
Accuracy	±0.2°C (±0.4°F)
Probe Handle	ABS
Interchange Error	±0.2°C (±0.4°F)
Probe	stainless steel AISI 316
Response Time (90% of final value)	6 seconds

The HI 762 series with NTC thermistor sensor offers a wide range of probes for measuring liquids, air and gases, and for penetration in semisolids.

Models are available with a 1, 2 or 10 meter cable, and colored handles to be identified more easily when measuring different samples.

HI 762P

General purpose, penetration probe with colored handle.

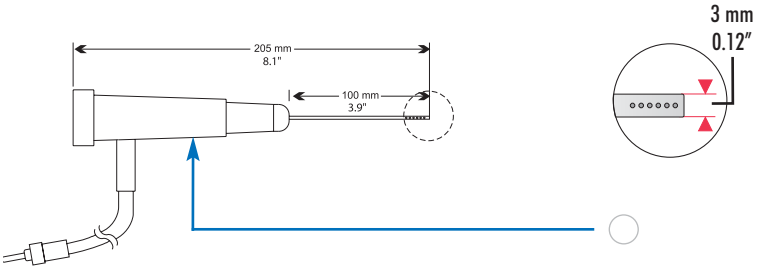


1 M (3.3') CABLE	2 M (6.6') CABLE	10 M (33') CABLE	HANDLE COLOR
HI 762PW	—	HI 762PW/10	White
HI 762PBL	—	HI 762PBL/10	Blue
HI 762PG	—	HI 762PG/10	Green
HI 762PR	—	HI 762PR/10	Red

HI 762A

Thermistor probe for measuring the temperature of air and gases.

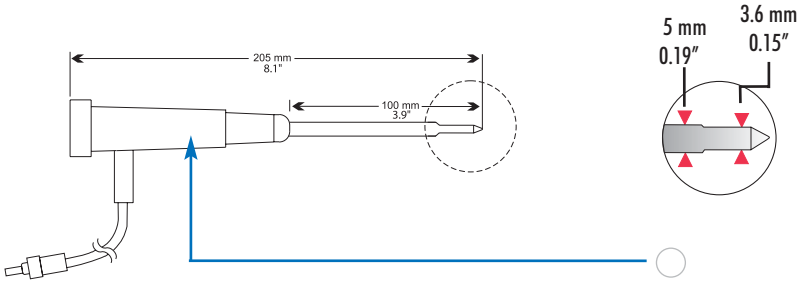




1 M (3.3') CABLE	2 M (6.6') CABLE	10 M (33') CABLE	HANDLE COLOR
HI 762A	—	HI 762A/10	White

HI 762PWL

Thermistor probe with sharp tip for penetration of semi solid samples.

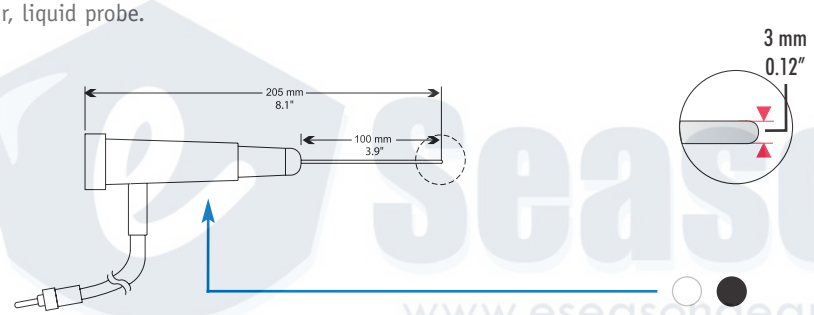




1 M (3.3') CABLE	2 M (6.6') CABLE	10 M (33') CABLE	HANDLE COLOR
HI 762PWL	—	—	White

HI 762L

Air, liquid probe.





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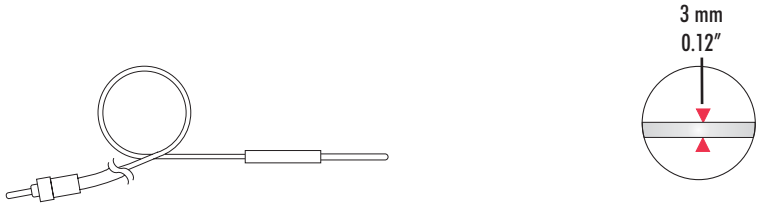
1 M (3.3') CABLE	2 M (6.6') CABLE	10 M (33') CABLE	HANDLE COLOR
HI 762L	HI 762L/2	HI 762L/10	White
HI 762BL	—	—	Black

HI 762W

Wire probe, designed to access hard-to-reach places.

Probe does not incorporate a handle.





1 M (3.3') CABLE	2 M (6.6') CABLE	10 M (33') CABLE
HI 762W	—	HI 762W/10

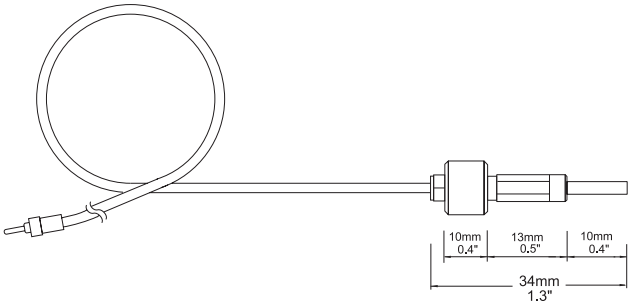
HI 762

HI 762 Thermistor Probes



HI 762DIP

Weighted probe without handle, designed to measure the temperature in tanks.



1 M (3.3') CABLE

HI 762DIP



HI 762BP

Thermistor probe without handle, designed to measure the temperature of stacked goods.



1 M (3.3') CABLE

HI 762BP

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Calibration Test Keys

for Thermistor Thermometers

For measurements that are always reliable, thermometers must be calibrated periodically.

HANNA test keys offer a fast and simple way of checking the accuracy of your instruments.

Connect the key to the probe input. If the reading on the display differs more than 0.4°C (0.8°F) from the key rated value, your thermometer should be re-calibrated at our technical service center.



Test Keys for Thermometers Using HI 762 Probes

HI 762-18C	Test key at -18°C	**HI 762070C**	Test key at 70°C	**HI 762032F**	Test key at 32°F
HI 762000C	Test key at 0°C	**HI 762-004F**	Test key at -0.4°F	**HI 762158F**	Test key at 158°F

For periodic verification of your thermometer's calibration, it is recommended to check at least two points. Choose the test keys with the nominal values closest to the temperature usually measured.

HI 765 Thermistor Probes

The HI 765 temperature probes are provided with a PTC thermistor sensor, and have the following specifications:

Range	-50 to 150°C (-58 to 302°F)
Accuracy	±0.2°C (±0.4°F)
Sensor	PTC thermistor
Probe Handle	ABS
Interchange Error	±0.2°C (±0.4°F)
Probe	stainless steel AISI 316;
Response Time (90% of final value)	8 seconds



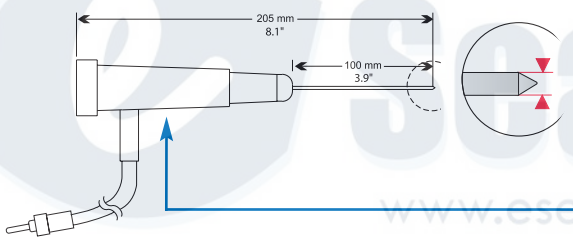
All probes are pre-calibrated with a maximum error of ±0.2°C (±0.4°F).

The HI 765 series can be identified by the white cap on the top of the handle. This series offers a wide range of probes for measuring liquids, air and gases, and for penetration in semisolids.

Models are available with a 1 or 10 meter cable, and colored handles for easy identification during measurements of different samples.

HI 765P

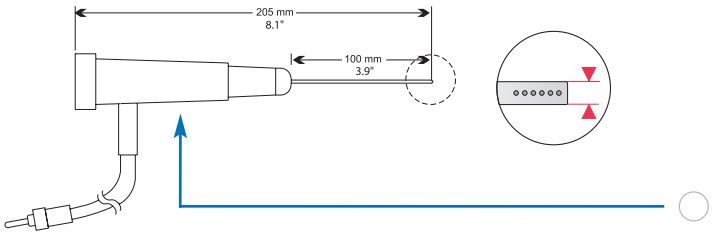
General purpose, penetration probe with colored handle.



1 M (3.3') CABLE	10 M (3.3') CABLE	HANDLE COLOR
HI 765PW	HI 765PW/10	White
HI 765PBL	HI 765PBL/10	Blue
HI 765PG	HI 765PG/10	Green
HI 765PR	HI 765PR/10	Red

HI 765A

Thermistor probe for measuring the temperature of air and gases.





1 M (3.3') CABLE	10 M (3.3') CABLE	HANDLE COLOR
HI 765A	HI 765A/10	White

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Thermometers

An introduction to HANNA Thermometers

different temperatures of the sample. It is, therefore, very important to determine the cold junction temperature very precisely. The ability to do this has a large effect on the accuracy of the measuring system. A thermocouple thermometer is made of two thermometers, one that measures the cold junction, and one for measuring the emf generated by the thermocouple. The cold junction is usually measured with an NTC type sensor, which has response times different from those of the thermocouple. Another crucial point is measuring the actual value of the cold junction, without any environmental influence and dispersions.

To partially solve this problem, HANNA has devised the calibration of the instrument-thermocouple system, by dipping the probe in melting ice, and thus allowing the user to calibrate the measuring system at 0°C.

Thanks to this solution, it is now possible to use thermocouple thermometers for HACCP controls with an accuracy of ±0.3°C, which is the same performance of our Pt100 or NTC thermometers, but with a higher response time.



Calibration Test Keys

To check the calibration status of the instrument, calibrated keys have been prepared in the range from -18°C to 70°C. These keys reproduce the value of the sensor at different temperatures. Simply disconnect the measuring probe, replace it with the key and make sure that the instrument reads the simulated value.

HANNA calibrates all thermometers with a standard probe. All NTC temperature probes are inspected and calibrated with standard instruments. During quality inspection our technicians make sure that the reading errors are within the stated accuracies.

In addition, HANNA provides you with the necessary tools to verify that your thermometers read accurate values.

In case of unacceptable readings, please return the instrument to the nearest HANNA technical service center.

Our complete line of electronic thermometers provides fast and precise measurements down to a tenth of a degree Celsius.

HANNA thermometers may be divided into four main categories: thermistor thermometers, thermocouple thermometers, Pt100 thermometers and infrared thermometers.

Thermistor Thermometers

The thermistor is a semi-conductor device whose resistivity (r) varies as a function of temperature (T)

r = ro (1+ aT)

where

ro = characteristic resistivity of material

a = temperature resistance coefficient of material



The temperature resistance coefficient is the parameter that determines if the resistivity variation is positive (as with the Positive Temperature Coefficient sensors) or negative (as with the Negative Temperature Coefficient thermistors). It is possible to determine the temperature by applying a potential difference and measuring the resistance.

Thermistor sensors are suitable for a temperature range of -50 to 150°C (-58 to 302°F). Higher temperatures may damage the semiconductor sensor. Accurate temperature measurements are possible (tenths of degree) due to the high sensitivity of the sensor.

Thermocouple Thermometers

The thermocouple consists of the junction of two wires of different metals. At a given temperature, a potential difference results at the opposite extremes of the two wires (Seebeck effect), with the respective variations linearly related within small intervals. It is therefore possible to determine the temperature given the potential difference and characteristics of the two metals. The measurement end of the thermocouple probe is called the hot junction, while the connection of the thermocouple to the meter is the cold junction. An error is introduced as the cold junction is exposed to the ambient temperature. This error can be eliminated by physically putting the cold junction into an ice bath and forcing a reference temperature of 0°C, or by electronically compensating for the cold junction temperature effect. There are various types of thermocouples, identified by an ANSI code using a letter of the alphabet. The K type is the most commonly used.



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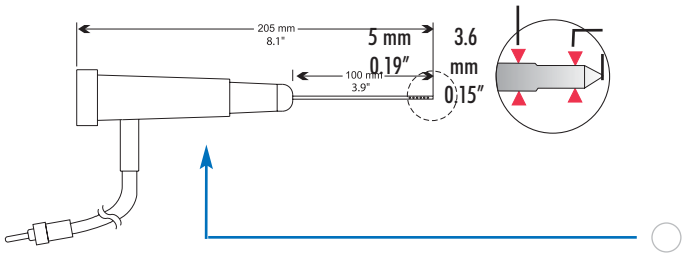
HI 765

HI 765 Thermistor Probes

HI 765PWL

Thermistor probe with sharp tip for penetration of semi solid samples.



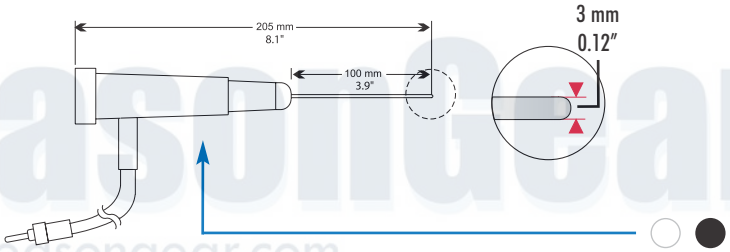


1 M (3.3') CABLE	10 M (3.3') CABLE	HANDLE COLOR
HI 765PWL	—	White

HI 765L

Air, liquid probe.





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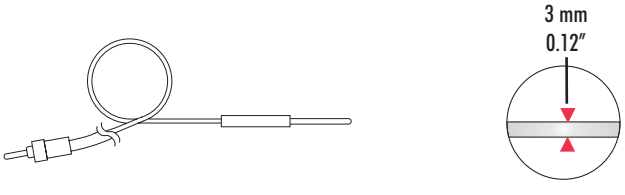
1 M (3.3') CABLE	10 M (3.3') CABLE	HANDLE COLOR
HI 765L	HI 765L/10	White
HI 765BL	—	Black

HI 765W

Wire probe, designed to access hard-to-reach places.

Probe does not incorporate a handle.

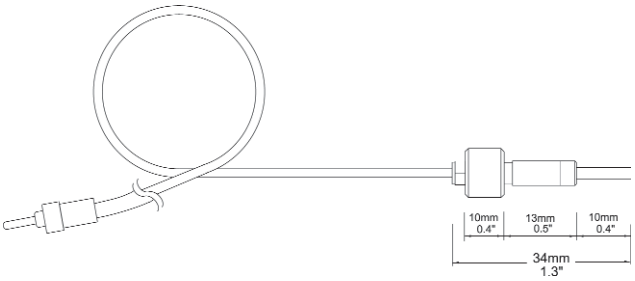




1 M (3.3') CABLE	10 M (33') CABLE
HI 765W	HI 765W/10

HI 765DIP

Weighted probe without handle, designed to measure the temperature in tanks.





1 M (3.3') CABLE	3 M (9.9') CABLE	5 M (16.4') CABLE	10 M (33') CABLE
HI 765DIP	HI 765DIP/3	HI 765DIP/5	HI 765DIP/10

HI 765BP

Thermistor probe without handle, designed to measure the temperature of stacked goods.





1 M (3.3') CABLE
HI 765BP

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Calibration Test Keys

for Thermistor Thermometers

For measurements that are always reliable, thermometers must be calibrated periodically.

HANNA test keys offer a fast and simple way of checking the accuracy of your instruments.

Connect the key to the probe input. If the reading on the display differs more than 0.4°C (0.8°F) from the key rated value, your thermometer should be re-calibrated at our technical service center.



Test Keys for Thermometers Using HI 765 Probes

HI 765-18C	Test key at -18°C	**HI 765070C**	Test key at 70°C	**HI 765032F**	Test key at 32°F
HI 765000C	Test key at 0°C	**HI 765-004F**	Test key at -0.4°F	**HI 765158F**	Test key at 158°F

For periodic verification of your thermometer's calibration, it is recommended to check at least two points. Choose the test keys with the nominal values closest to the temperature usually measured.

HI 955301 • HI 955302

Pt100 Thermometers

Printing and Logging with 1 or 2-Channels



Extensive Logging Capabilities

HI 955301 and HI 955302 combine high resolution and extended temperature with extensive logging capabilities and an infrared data transfer system. In addition to supplying the user with instant printouts of date, time and temperature, they also store data to be transferred to a PC or printer.

HI 955301 accepts one temperature probe while HI 955302 can take 2 separate Pt100 probes. The sophisticated software allocates up to 16000 temperature readings to maximize available space, regardless of the number of channels in use. Large easy-to-read digits display readings, with a secondary readout level displaying logging interval, channel, time and date. Due to extensive use of advanced electronics, all of these features can be housed in a package weighing just 500 grams.

These meters are calibrated against a certified standard. Recalibration service is available upon request.

HANNA offers a variety of optional 4-wire Pt100 HI 768 series temperature probes to fit your application needs.

- *Print an indisputable record of your measurements*
- *Selectable printing and logging intervals*
- *Connect 2 separate probes simultaneously (HI 955302)*
- *Optional computer compatibility with HANNA's HI 92000 compatible Windows software and HI 9200/9 infrared interface cradle*

SPECIFICATIONS	HI 955301	HI 955302
Range	-200.0 to 850.0°C	
Resolution	0.1°C or 1°C, selectable	
Accuracy	±0.1°C ±0.1% of reading (for 1 year, excluding probe error)	
Channels	1	2
Probe	HI 768 series, 4-wire Pt100 probe (not included)	
Printer	low power impact, 14 characters per line, using 38 mm plain paper (HI 710034)	
Printing Interval	selectable at 1, 2, 5, 10, 15, 30, 60, 120 or 180 minutes	
PC Connection	HI 9200 interface through RS232 serial port and using HI 92000 software (not included)	
Power Supply	(4) 1.5V AA battery / approx. 500 hours (with 60' printing interval); auto-off after 5 minutes of non-use; or 12 Vdc input	
Environment	0 to 50°C (32 to 122°F); RH max 95%	
Dimensions	220 x 82 x 66 mm (8.7 x 3.2 x 2.6")	
Weight	550 g (1.2 lbs.)	

ORDERING INFORMATION

HI 955301 and **HI 955302** are supplied with paper rolls (5), batteries (4) and rugged carrying case.

PROBES

HI 768A	Air/gas Pt100 temperature probe with 1 m cable
HI 768L	General purpose/liquid Pt100 probe with 1 m cable
HI 768P	Penetration Pt100 temperature probe with 1 m cable

ACCESSORIES

HI 721317	Rugged carrying case
HI 710005	115 Vac/12 Vdc power adapter
HI 710006	230 Vac/12 Vdc power adapter
HI 710034	Paper roll (10 pcs.)
HI 710035	Ink cartridge (1 pc.)
HI 9200/9	Serial interface for PC connection
HI 92000	Windows® compatible software



HI 710034 Paper Rolls

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HANNA instruments

With Great Products, Come Great Results™

Pt100 Printing Thermometer

with up to 2 Probes

High Range, High Resolution

It is often desirable to print and measure temperature in the higher ranges without having to compromise high resolution. For this purpose HANNA has developed the HI 955201 single channel and the HI 955202 dual-channel, 4-wire Pt100 printing thermometers.

These thermometers have a resolution of 0.1°C in the range of -200.0 to 850.0°C. A built-in printer makes it possible to obtain a hard-copy of your measurements taken on 1 or 2 channels, instantly or at determinable intervals. This means you can leave the meter without supervision to record your readings and not have to worry about human error in repeated or prolonged testing. The low-consumption printer uses widely available plain paper that will not fade over time.

For extended time measurements, the meters can be powered with 12 Vdc. The meter is calibrated against a certified standard.

Choose from a wide variety of optional Pt100 HI 768 series temperature probes from HANNA instruments.®

- *Print an indisputable record of your measurements*
- *Selectable printing intervals*
- *Connect 2 separate probes simultaneously (HI 955202)*





HI 710035 Ink Cartridge



HI 721317 Rugged Carrying Case

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SPECIFICATIONS	HI 955201	HI 955202
Range	-200.0 to 850.0°C	
Resolution	0.1°C or 1°C, selectable	
Accuracy	±0.1°C ±0.1% of reading (for 1 year, excluding probe error)	
Channels	1	2
Probe	HI 768 series, 4-wire Pt100 probe (not included)	
Printer	low power impact, 14 characters per line, using 38 mm plain paper (HI 710034)	
Printing Interval	selectable at 1, 2, 5, 10, 15, 30, 60, 120 or 180 minutes	
Power Supply	(4) 1.5V AA battery / approx. 500 hours (with 60' printing interval); auto-off after 5 minutes of non-use; or 12 Vdc input	
Environment	0 to 50°C (32 to 122°F); RH max 95%	
Dimensions	220 x 82 x 66 mm (8.7 x 3.2 x 2.6")	
Weight	550 g (1.2 lbs.)	

ORDERING INFORMATION

HI 955201 and **HI 955202** are supplied with paper rolls (5), batteries (4) and rugged carrying case.

ELECTRODES

HI 768A	Air/gas Pt100 temperature probe with 1 m cable
HI 768L	General purpose/liquid Pt100 probe with 1 m cable
HI 768P	Penetration Pt100 temperature probe with 1 m cable

ACCESSORIES

HI 710005	115 Vac/12 Vdc power adapter
HI 710006	230 Vac/12 Vdc power adapter
HI 710034	Paper roll (10 pcs.)
HI 710035	Ink cartridge (1 pc.)
HI 721317	Rugged carrying case

HI 955501 • HI 955502

4-wire Pt100 Thermometers

from -199.9 to 850°C



Shown with optional HI 710007 protective rubber boot

For Supreme Accuracy in Temperature Measurements

Pt100 models are widely recognized as the most accurate with the best stability, repeatability and linearity among thermometers. Add to this the 4-wire system that is practically impervious to lead-wire length error and you have a powerful tool to measure temperature accurately. We have designed two affordable models for you to choose from: HI 955501 with the interchangeable HI 768 Pt100 probes and HI 955502 with the fixed general-purpose probe and 1m (3.3') lead.

Both models measure temperatures with 0.1°C resolution in the -199.9 to 199.9°C range and then automatically switch to 1°C from 200 to 850°C. Press RANGE and the resolution switches to 1°C at any time. A compact, ergonomic design and a wrist-strap make it easy to carry them anywhere in the lab or plant.

To protect the meter during field measurements, a HANNA shockproof boot is recommended.

- *Available with interchangeable or fixed probe*
- *Economical*
- *Optional Protective Boot Recommended*

SPECIFICATIONS	HI 955501	HI 955502
Range	-199.9 to 199.9°C; 200 to 850°C	
Resolution	0.1°C (-199.9 to +199.9°C); 1°C (200 to 850°C)	
Accuracy	±0.2°C and ±1 digit (-120.0 to 199.9°C); ±1°C and ±1 digit (-170 to 450°C); ±1% F.S. and ±1 digit (outside) (for 1 year, excluding probe error)	
Probe	HI 768 series, Pt100, stainless steel, with 1 m (3.3') cable (not included)	Pt100, stainless steel, with 1 m (3.3') cable (fixed)
Battery Type / Life	(1) 9V / approx. 150 hours of continuous use	
Environment	0 to 50°C (32 to 122°F); RH max 95%	
Dimensions	143 x 80 x 38 mm (5.6 x 3.2 x 1.5")	
Weight	320 g (11.3 oz.)	

ORDERING INFORMATION

HI 955501 is supplied with 9V battery and instruction manual.

HI 955502 is supplied with 9V battery, general purpose temperature probe and instruction manual.

PROBES

HI 768A Air/gas temperature probe with 1 m (3.3') cable

HI 768L General purpose/liquid temperature probe, 1 m cable

HI 768P Penetration temperature probe with 1 m (3.3') cable

ACCESSORIES

HI 710007 Shockproof rubber boot, blue

HI 710008 Shockproof rubber boot, orange

HI 710004 Soft carrying case



HI 710004 Soft Carrying Case

HANNA instruments

With Great Products, Come Great Results™

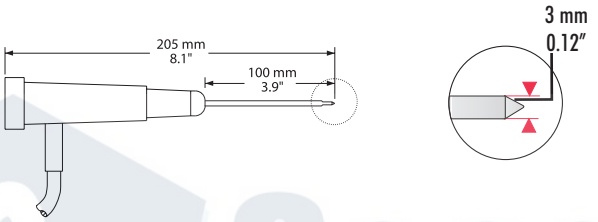
The HI 768 series of temperature probes is provided with a Pt100 sensor and features the following specifications:

Range	-30 to 350°C (-22 to 622°F)
Sensor	Pt100
Accuracy	±0.25°C (±0.5°F) ±3% of reading
Probe Handle	Carilon®
Interchange Error	±0.2°C (±0.4°F)
Probe	stainless steel AISI 316
Response Time	30 seconds

The three HI 768 probes have been designed for liquid, air/gas and penetration measurements, respectively. The HI 768L model is available with a 1, 3 or 5 meter (3.3', 9.9' or 16.4') cable.

HI 768P, General Purpose/Penetration Probe

Pt100 probe for applications, such as air measurement and penetration of semisolids.

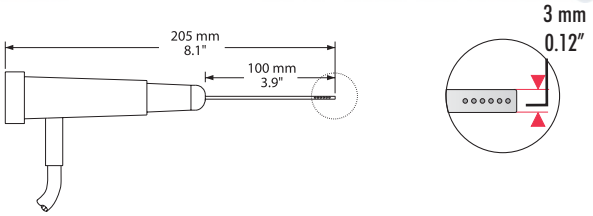




1 M (3.3') CABLE
HI 768P

HI 768A

Pt100 probe for measuring the temperature of air and gases.

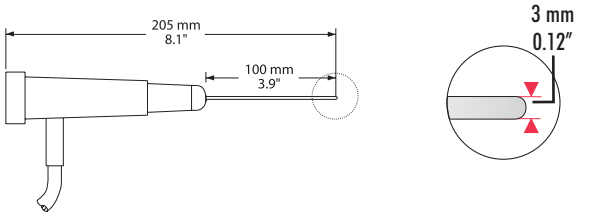




1 M (3.3') CABLE
HI 768A

HI 768L

Pt100 probe for applications, such as liquid and air.





1 M (3.3') CABLE	*3 M (9.9') CABLE*	*5 M (16.4') CABLE*
HI 768L	HI 768L/3	HI 768L/5

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HI 99551 • HI 99556

Infrared Thermometers

for Food Applications



Non-invasive Temperature Measurement for the Food Industry

The HANNA HI 99551 and HI 99556 thermometers employ infrared technology to measure the surface temperature. Infrared measurements are extremely practical with a fast response time, typically around 1 second.

A crucial advantage of these meters is the non-intrusive nature of the measurements. This feature is particularly attractive in the food industry since it translates practicality into substantial savings by leaving products intact, especially those sealed or pre-wrapped.

In order to measure the temperature, simply point to the product or target and hold down the measurement key. Readings are immediately displayed on the LCD. This type of non-intrusive measurement is also useful when the surface temperature is too high to approach, for difficult-to-reach places or for hygiene requirements.

These HANNA meters are particularly attractive for food distribution, retailing and supermarkets.

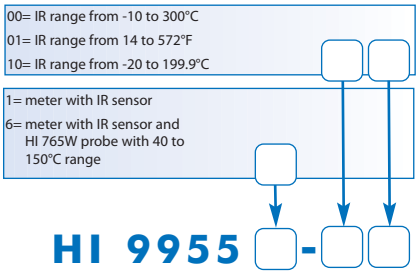
Both HI 99551 and HI 99556 run on a common 9V battery with a low battery indication on the display. An optional HANNA rubber boot makes the meter truly shockproof.

If you must check the core temperature in addition to surface measurement, the HI 99556 is the ideal solution for you. Simply attach an optional external probe to the meter and you have a 2-in-1 infrared-thermistor thermometer.

- *Measure temperature through sealed items*
- *Optional external probe can also be used (HI 99556)*

SPECIFICATIONS		HI 99551 / HI 99556
Range	IR	-10 to 300°C ("-00" models); 14 to 572°F ("-01" models); -20.0 to 199.9°C ("-10" models)
	Probe	-40 to 150°C (HI 99556 only)
Resolution	IR	1°C ("-00" models); 1°F ("-01" models); 0.1°C ("-10" models)
	Probe	0.1°C (HI 99556 only)
Accuracy	IR	±2% of reading or ±2°C (-00 and -10 models); ±2% of reading or ±3°F (-01 models)
	Probe	±0.5°C (-20 to 120°C) /±1°F (0 to 250°F); ±0.5°C / ±1°F +1% reading (outside) (HI 99556 only)
IR Sensor Response Time		1 second
IR Sensor Optic Coefficient		3:1 (ratio of distance to target diameter)
Minimum Distance		30 mm (1.2")
Probe		HI 765PW (included) (HI 99556 only)
Battery Type / Life		(1) 9V / approx. 150 hours of continuous use
Environment		0 to 50°C (32 to 122°F); RH max 95%
Dimensions		143 x 80 x 38 mm (5.6 x 3.2 x 1.5")
Weight		320 g (11.3 oz.)

ORDERING INFORMATION



PROBES

HI 765PW	Temperature probe for HI 99556
HI 731318	Sensor cleaning tissue (4)

ACCESSORIES

HI 710007	Shockproof rubber boot, blue
HI 710008	Shockproof rubber boot, orange
HI 710004	Soft carrying case
HI 721316	Rugged carrying case



HI 721316 Rugged Carrying Case

HANNA instruments

With Great Products, Come Great Results™

Quick, Non-intrusive Temperature Measurements

Infrared radiation emitted from an object depends on its temperature. The HANNA HI 99550 infrared thermometer employs this technology to measure surface temperature. Infrared thermometers provide non-invasive measurements with instantaneous response times. This can translate into substantial savings particularly in industries where products are sealed or pre-wrapped.

In order to measure the temperature, simply point to the product or the target spot and hold down the measurement key. The measured value will be immediately displayed on the LCD.

This type of non-intrusive measurement is also useful when the surface temperature is high, for difficult-to-reach places or due to hygiene requirements.

HANNA HI 99550 is designed with a wrist-strap and ergonomic shape for greater ease of use.

The fast response time and the HOLD function make HI 99550 infrared thermometer particularly attractive for repetitive tests in the factory or on the production line.

- *Measure temperature in difficult to reach places*
- *HOLD function freezes measurements on LCD display*
- *Ideal for industrial facilities*



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SPECIFICATIONS	HI 99550-00	HI 99550-01
Range	-10 to 300°C	14 to 572°F
Resolution	1°C	1°F
Accuracy	±2% of reading or ±2°C	±2% of reading or ±3°F
Emissivity	0.95	
Typical Response Time	1 second	
Optic Coefficient	3:1 (ratio of distance to target diameter); minimum distance 30 mm (1.2")	
Battery Type / Life	(1) 9V / approx. 150 hours of continuous use	
Environment	0 to 50°C (32 to 122°F); RH max 95%	
Dimensions	143 x 80 x 38 mm (5.6 x 3.2 x 1.5")	
Weight	320 g (11.3 oz.)	



HI 710004 Soft Carrying Case

ORDERING INFORMATION

HI 99550-00 is supplied with battery and instructions.

HI 99550-01 is supplied with battery and instructions.

ACCESSORIES

HI 710007	Shockproof rubber boot, blue
HI 710008	Shockproof rubber boot, orange
HI 710004	Soft carrying case
HI 721316	Rugged carrying case

HI 141

Temperature Dataloggers

with 1 or 2 channels, internal or external sensor, with or without LCD

min/max | upgraded | B.E.P.S. | PC compatible

At a glance, you can assess the current temperature, channel and status of the logging sequence according to your programmed instructions:



Number of samples taken



Countdown until the start of logging



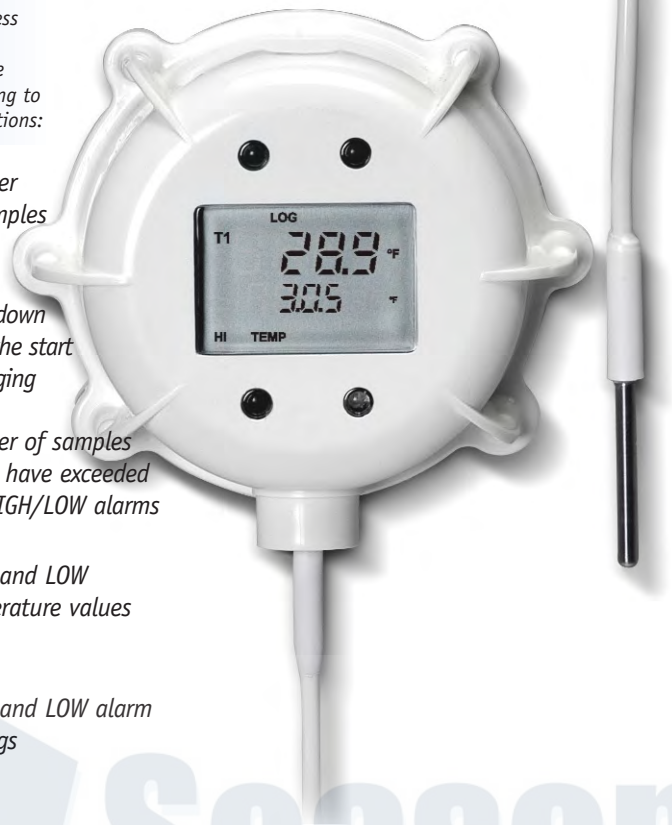
Number of samples which have exceeded the HIGH/LOW alarms



HIGH and LOW temperature values



HIGH and LOW alarm settings



SPECIFICATIONS MODEL	DISPLAY	SENSOR(S)	RANGE
HI 141A(H)		1 internal	-40.0 to 80.0°C / -40.0 to 176.0°F
HI 141B(H)*		1 external	-40.0 to 125.0°C / -40.0 to 257.0°F
HI 141C(H)	•	1 internal	-20.0 to 70.0°C / -40.0 to 158.0°F
HI 141D(H)	•	1 external	-40.0 to 125.0°C / -40.0 to 257.0°F
HI 141E(H)*		1 internal 1 external	-40.0 to 80.0°C / -40.0 to 176.0°F -40.0 to 125.0°C / -40.0 to 257.0°F
HI 141F(H)*		2 external	-40.0 to 125.0°C / -40.0 to 257.0°F
HI 141G(H)*	•	1 internal 1 external	-20.0 to 70.0°C / -40.0 to 158.0°F -40.0 to 125.0°C / -40.0 to 257.0°F
HI 141J(H)*	•	2 external	-40.0 to 125.0°C / -40.0 to 257.0°F

SPECIFICATION FOR ALL MODELS

Resolution	0.1°C (-40.0 to 100.0°C); 0.2°C (> 100.0°C) 0.1°F (-40.0 to 190.0°F); 0.3°F (> 190.0°F)
Accuracy	±0.5°C (-40.0 to 0.0 and 70.0 to 100.0°C); ±0.4°C (0.0 to 70.0°C); ±1.0°C (> 100.0°C) ±1.0°F (-40.0 to 32.0 and 158.0 to 212.0°F); ±0.8°F (32.0 to 158.0°F); ±2.0°F (> 212.0°F)
Environment	RH 100%
Diameter	86.5 mm (3.4")
Height	35 mm (1.4")
Weight	150 g (5.5 oz.)

ORDERING INFORMATION

All **HI 141** models are supplied with 3.6V Lithium AA battery, magnetic key and instructions.

ACCESSORIES

HI 141000 Windows® application software (Required)

HI 141001 Infrared transmitter (Required)

HI 740033 3.6 V AA lithium battery

HI 740221 Key for HI 141 magnetic start

Available in Multiple Configurations

The HI 141 series is a family of temperature data loggers with either one or two channels, internal or external temperature sensors, and an optional LCD. External temperature sensor models feature one or two stainless steel sensors on a 1m (3.3') cable for direct insertion. HI 141 can store up to 16,000 temperature samples in a protected, non-volatile EEPROM memory. The logging interval can be set from once per second to once per 24 hour period, and logging delay can be set anywhere up to 199 hours. The MIN or MAX temperature between logging intervals can also be stored. All of your collected data is tamper-proof and stored into serial numbered lots.

The user interacts with the logger, setting data acquisition parameters or down-loading logged data through an RS232 serial port on a Windows® PC. The HI 141000 Windows® compatible software supports communication between the logger and the PC through the HI 141001 infrared transmitter.

The housing is waterproof and can include a convenient hanging hook (simply add an "H" to the end of the code). A long-life AA lithium battery provides power. For a typical 1 minute logging interval, your battery will last about 4 years.

Models with a longer cable for external sensors are available upon request.

- *1 or 2 channels* with internal or external sensor
- *16,000 samples/channel* (for 1-channel models) *or 8,000* samples/channel (for 2-channel models)
- *Logging interval* from 1 second to 24 hours
- *Logging delay* start up to 199 hours and magnetic start
- *Programmable high and low alarms*
- *Non-volatile storage* of logging parameters and data in EEPROM
- *IP67 waterproof casing*

* Models with different cable lengths are available upon request. Contact your nearest HANNA dealer.

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HANNA instruments

With Great Products, Come Great Results™

Compact Dataloggers with PC Connectivity

HI 140 loggers weigh merely 150 grams each and are not much larger than your PC mouse. They are housed in a smooth, yet tough ABS casing that is sealed against ingress of dust and water.

HI 140 models are tailor-made with different temperature ranges to make them more accurate for your specific needs. They are also very simple-to-use with no keys or buttons to press or hold. A Green LED on the front of the meter will notify you of the logging status, while a Red LED serves as an alarm indication when undesired temperatures have been encountered.

HI 140 series can monitor and store up to 7600 temperatures in non-volatile memory for downloading and analysis. Users can then transfer the logged data to the PC by simply placing the instrument on the HI 90140 interface and running the HI 92140 software. Users need just one interface connected to your PC to handle all HANNA dataloggers, each identified by a unique ID code.

Each model of the HI 140 series is available with molded eye for easy mounting.

- *Store up to 7600 Temperatures*
- *Available in a wide range of temperatures*
- *Economical*





SPECIFICATIONS
HI 140 WITHOUT HOOK

MODEL	RANGE	RESOLUTION	ACCURACY
HI 140A	-30.0 to 70.0°C / -22.0 to 158.0°F	0.5°C / 0.5°F	±1.5°C / ±3°F
HI 140B	-10.0 to 30.0°C / 14 to 86°F	0.2°C / 0.4°F	±0.5°C / ±1°F
HI 140C	-30.0 to 10.0°C / -22 to 50°F	0.2°C / 0.4°F	±0.5°C / ±1°F
HI 140D	20.0 to 60.0°C / 68 to 140°F	0.2°C / 0.4°F	±0.5°C / ±1°F
HI 140E	-30.0 to -10.0°C / -22 to 14°F	0.1°C / 0.2°F	±0.3°C / ±0.6°F
HI 140F	20.0 to 40.0°C / 68 to 104°F	0.1°C / 0.2°F	±0.3°C / ±0.6°F
HI 140G	-5.0 to 15.0°C / 23 to 59°F	0.1°C / 0.2°F	±0.3°C / ±0.6°F
HI 140H	10 to 120°C / 50 to 248°F	1°C /.2°F	±2°C / ±4°F

HI 140 WITH HOOK (MOLDED EYE)

MODEL	RANGE	RESOLUTION	ACCURACY
HI 140AH	-30.0 to 70.0°C / -22.0 to 158.0°F	0.5°C / 0.5°F	±1.5°C / ±3°F
HI 140BH	-10.0 to 30.0°C / 14 to 86°F	0.2°C / 0.4°F	±0.5°C / ±1°F
HI 140CH	-30.0 to 10.0°C / -22 to 50°F	0.2°C / 0.4°F	±0.5°C / ±1°F
HI 140DH	20.0 to 60.0°C / 68 to 140°F	0.2°C / 0.4°F	±0.5°C / ±1°F
HI 140EH	-30.0 to -10.0°C / -22 to 14°F	0.1°C / 0.2°F	±0.3°C / ±0.6°F
HI 140FH	20.0 to 40.0°C / 68 to 104°F	0.1°C / 0.2°F	±0.3°C / ±0.6°F
HI 140GH	-5.0 to 15.0°C / 23 to 59°F	0.1°C / 0.2°F	±0.3°C / ±0.6°F
HI 140HH	10 to 120°C / 50 to 248°F	1°C /.2°F	±2°C / ±4°F

All loggers have the following features: programmable high and low alarm thresholds; programmable logging interval from 1 min. to 23 hours and 59 min; logging delay start selectable from 0 min. to 23 hours and 59 min; programmable ID number; infrared communication with serial interface; programmable real time clock; 3 x 1.5V AA batteries (included) with approx. life of 4 years at 25°C; dimensions: dia 86.5 mm x h 35 mm; / weight: 150 g

ORDERING INFORMATION

All **HI 140** models are supplied with AA 1.5V batteries (3)

ACCESSORIES

HI 90140	Infrared interface for PC connection
HI 92140	Windows® compatible software

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Thermometers

An introduction to HANNA Thermometers

Pt100 Thermometers



The operating principle of resistance thermometers is based on the increase of electric resistance of metal conductors (RDT: Resistance Temperature Detectors) with temperature.

This physical phenomenon was discovered by Sir Humphry Davy in 1821. In 1871, Sir William Siemens described the application of this property using platinum, thereby introducing an innovation in the manufacturing of temperature sensors. Platinum resistance thermometers have been used as international standard for measuring temperatures between hydrogen triple point at 13.81 K and the freezing point of antimony at 630.75°C (1167.26°F).

Among the various metals to be used in the construction of resistance thermometers, platinum, a noble metal, is the one that can measure temperatures throughout a wide range, from -251 (-419.8°F) to 899°C (1650.2°F), with a linear behavior.

Platinum RTD thermometers were common in the seventies but now they have been replaced with thermistor sensors because of their smaller dimensions (weight) and faster response to temperature changes. The most common RTD sensor, using platinum, is the Pt100, which means a resistance of 100W at 0°C with a temperature coefficient of 0.00385W per degree Celsius. For a higher price one can buy platinum sensors with 250, 500 or 1000W (Pt1000).

The main disadvantage of RTD probes is the resistance of the connection cable.

This resistance prevents the use of standard two-wire cables for lengths over a few meters, since it affects the accuracy of the reading. For this reason, to obtain high levels of accuracy in industrial and laboratory applications, the use of a three or four-wire system is recommended.

For all its Pt100 thermometers and probes, HANNA has chosen the multiple-wire technology for higher accuracy.



Infrared Thermometers

All objects emit a radiant energy in the infrared (IR) spectrum that falls between visible light and radio waves.

The origins of IR measurements can be traced back to Sir Isaac Newton's prism and the separation of sunlight into colors and electro-magnetic energy. In 1800, the relative energy of each color was measured but it was not until early 20th century that IR energy was quantified. It was then discovered that this energy is proportional to the 4th power of the object's temperature.

IR instrumentation using this formula has been around for over 50 years. They almost exclusively use an optic device that detects the heat energy generated by the object that the sensor is aimed at. This is then amplified, linearized and converted into an electronic signal which in turn shows the surface temperature in Celsius or Fahrenheit degrees.



Infrared measurements are particularly suitable for areas where it is difficult or undesirable to take surface measurements using conventional contact sensors. Applications for IR meters include non-destructive testing of foodstuffs, moving machinery, high temperature surfaces and hazardous areas, such as high voltage wires.

An ideal surface for IR measurements is a black body or radiator with an emissivity of 1.0. Emissivity is the ratio of the energy radiated by an object at a certain temperature to that emitted by a perfect radiator at the same temperature.

The shinier or more polished the surface, the less accurate the measurements. For example, the emissivity of most organic material and rough or painted surfaces is in the 0.95 region and hence, suitable for IR measurements.

On the other hand, surfaces of highly polished or shiny material, such as mirrors or aluminum, may not be appropriate for this application without using some form of filtration. This is due to other factors, namely, reflectivity and transmissivity. The former is a measure of an object's ability to reflect infrared energy while the latter is its ability to transmit it.

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HI 142 • HI 504903

Temperature Monitoring System

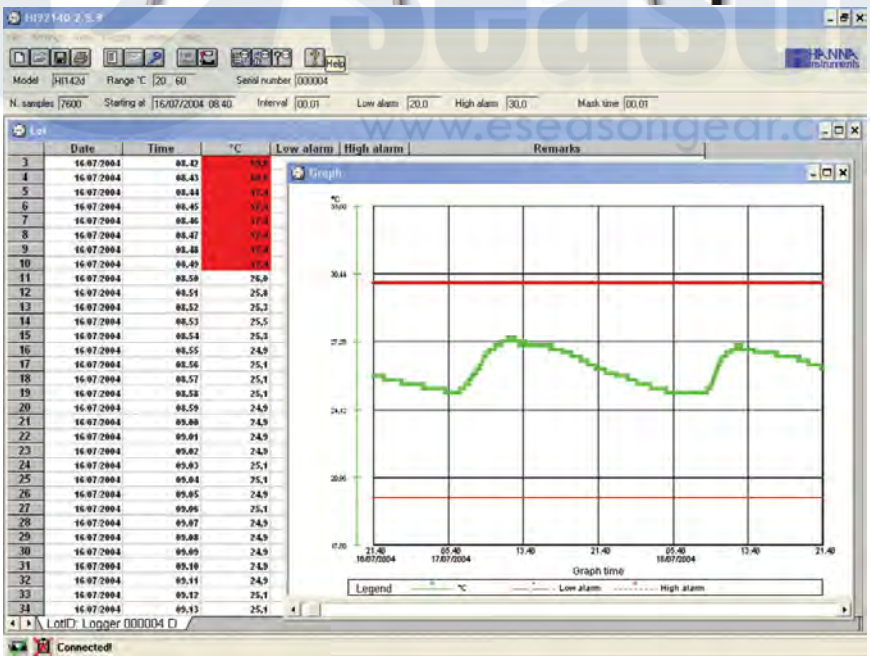
for Temperature Monitoring from PC, Cellular Phone and Modem

GSM · B.E.P.S. · PC compatible

• *Cable length connection is determined by the user*







Direct or Modem connection between your Loggers and the PC

Required temperature monitoring and control is becoming more prevalent in the food industry, catering and supermarkets.

Several regulations also dictate a hard copy of the measured temperatures from production to the consumer.

For this reason many instruments have been produced for continuous temperature monitoring, but they usually have to be removed from their location for data downloading.

Now, with the advanced technology of our HI 142 this is no longer a problem. HI 142, available in 8 models with different temperature ranges, allows for data transfer directly to a PC or through the HI 504903 GSM supervisor.

You can interact with the loggers directly from your PC, perform set-up, check the status of the instruments and download the data when the logging is complete.

You can choose between two connection types: a direct connection between the

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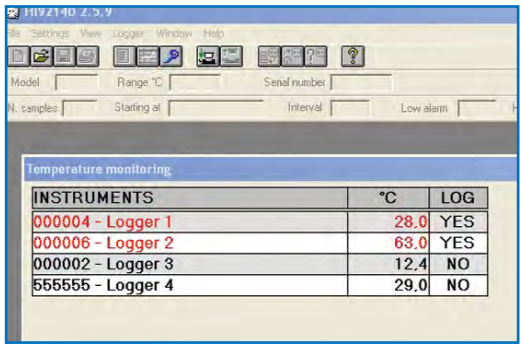
Temperature Monitoring System

for Temperature Monitoring from PC, Cellular Phone and Modem





- *Dataloggers have the ability to be either directly connected to a PC or through the use of the HI 504903 GSM supervisor*

HI 142 and a PC or to the HI 142/HI 504903 system. The HI 142/HI 504903 system allows a remote modem connection for supervision of the loggers where a direct connection is not available.

It is possible to build a control network with up to 31 loggers.

If an error occurs in one or more loggers such as, the measured temperature is outside the set limit or in case of a power failure, HI 504903 will advise the user by sending an SMS to the programmed phone number(s). The message will contain the logger ID and the error. If HI 504903 does not receive any confirmation of received SMS, it will continue to send the message and call the user.

The operator can also check the system status by calling the HI 504903 GSM supervisor, that will answer with an SMS for each logger. The message will include the operating status (stand-by-logging), any recorded error and the current temperature.

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SPECIFICATIONS

MODEL	RANGE	RESOLUTION	ACCURACY
HI 142A(H)	-30.0 to 70.0°C / -22.0 to 158.0°F	0.5°C / 0.5°F	±1.5°C / ±3°F
HI 142B(H)	-10.0 to 30.0°C / 14 to 86°F	0.2°C / 0.4°F	±0.5°C / ±1°F
HI 142C(H)	-30.0 to 10.0°C / -22 to 50°F	0.2°C / 0.4°F	±0.5°C / ±1°F
HI 142D(H)	20.0 to 60.0°C / 68 to 140°F	0.2°C / 0.4°F	±0.5°C / ±1°F
HI 142E(H)	-30.0 to -10.0°C / -22 to 14°F	0.1°C / 0.2°F	±0.3°C / ±0.6°F
HI 142F(H)	20.0 to 40.0°C / 68 to 104°F	0.1°C / 0.2°F	±0.3°C / ±0.6°F
HI 142G(H)	-5.0 to 15.0°C / 23 to 59°F	0.1°C / 0.2°F	±0.3°C / ±0.6°F
HI 142H(H)	10 to 120°C / 50 to 248°F	1°C / 2°F	±2°C / ±4°F

SPECIFICATIONS FOR ALL MODELS

Data Logging	up to 7600 samples
Environment	0 to 50°C (32 to 122°F); RH max 95%
Power Supply	10-20 Vdc
Probe	fixed, with 1.5 m cable of non-toxic material
Dimensions / Weight	dia 86.5 x h 35 mm (dia 3.4 x h 1.4") / 150 g (5.5 oz.)

ORDERING INFORMATION

HI 142 is supplied with instructions

HI 504903 is supplied with configuration software, line termination key, HI 920010 serial cable for PC connection, 12 Vdc power adapter and instructions.

ACCESSORIES

HI 504903-1 GSM supervisor (dual-band 900/1900 MHz with 115 Vac/12 Vdc power adapter)

HI 504903-2 GSM supervisor (dual-band 900/1800 MHz with 230 Vac/12 Vdc power adapter)

HI 92140 Windows® compatible software

HI 143

T-Logger

with locking wall cradle



Secure Temperature Logger

HI 143 is a temperature data logger with internal NTC sensor. The HI 143 is controlled via USB on a PC with HANNA's Windows® compatible application software. Communication is made between the logger and the PC through the HI 143001 transmitter with RS232 or HI 143002 with USB connector. The supplied wall cradle makes it easy to lock the meter in place to prevent tampering and the application software supports security passwords.

- *Logging start through PC* by pressing a button or at a set time
- *Selectable sampling interval* from 1 minute to 24 hours
- *Up to 4,000 logged samples*
- *Selectable measurement unit,* °C or °F
- *Min/Max* measured values are stored and displayed
- *Programmable high and low alarms*
- *Non-volatile storage* of logging parameters and data
- *Battery level indicator on display*
- *Security password*
- *IP 65 protection*

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HI 143

T-Logger

with locking wall cradle



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SPECIFICATIONS	HI 143
Range	-30. to 70.0°C/-22.0 to 158.0°F
Resolution	0.1°C/0.1°F
Accuracy	±0.4°C (-20 to 60°C); ±0.6°C (outside) ±0.7°F (-4 to 140°C); ±1.1°F (outside)
Calibration	Factory calibrated
Datalogging	Up to 4,000 samples
Logging interval	User selectable, from 1 minute to 24 hours
Battery Type / Life	(1) CR2032 3V lithium ion/approx. 2 years
Protection	IP 65 (water-resistant)
Dimensions	60 x 37 x 17 mm (2.4 x 1.5 x 0.7")

ORDERING INFORMATION

HI 143 is supplied with CR2032 lithium battery, wall cradle, lock and instructions.

HI 143-00 is supplied with HI 143002 USB communication cradle, Windows® compatible application software, CR2032 lithium battery, wall cradle, lock and instructions.

HI 143-10 is supplied with HI 143001 RS232 communication cradle, Windows® compatible application software, CR2032 lithium battery, wall cradle, lock and instructions.

ACCESSORIES

HI 143002 USB communication cradle.

HI 143001 RS232 communication cradle.

HI 98501 • HI 98502 • HI 98505 • HI 98506

Checktemp® Electronic Digital Thermometer

with ±0.3°C Accuracy and CAL CHECK™



Quick and Accurate Temperature Measurement

Did you ever wish that your temperature measurements could be made a little easier? The Checktemp® offers better accuracy over a wider range without worrying about breakage or condensation. Checktemp® might just be what you have been looking for!

The Checktemp® offers NO breakage, NO waste, NO injuries, NO difficulty in reading; not even a parallax error by taking a wrong measurement due to the angle of view!

Checktemp® is provided with the unique calibration check function: simply activate a switch and the instrument will simulate an ice bath of 0.0°C (32.0°F) signal that is displayed on the LCD within a range of ±0.3°C (±0.5°F). This system guarantees the accuracy of your measurement every time!

The sharp-tip probe of the Checktemp® easily penetrates semisolid products, making routine controls simple and quick for both incoming and outgoing goods. Checktemp® is the ideal instrument for measuring temperature according to HACCP requirements.

Checktemp® L models feature a round tip probe for liquid measurements and safety.

- *CAL CHECK™*
- *Ideal for Spot Checks*
- *Fast and Accurate Results*

SPECIFICATIONS	HI 98501 (Checktemp® C)	HI 98502 (Checktemp® F)	HI 98505 (Checktemp® LC)	HI 98506 (Checktemp® LF)
Range	-50.0 to 150.0°C	-58.0 to 302.0°F	-50.0 to 150.0°C	-58.0 to 302.0°F
Resolution	0.1°C	0.1°F (58.0 to 199.9°F); 1°F (200 to 302°F)	0.1°C	0.1°F (58.0 to 199.9°F); 1°F (200 to 302°F)
Accuracy	±0.3°C (-20 to 90°C) ±0.5°C (outside)	±0.5°F (-4 to 194°F) ±1°F (outside)	±0.3°C (-20 to 90°C) ±0.5°C (outside)	±0.5°F (-4 to 194°F) ±1°F (outside)
Probe	fixed, stainless steel 105 x dia 3 mm (4.1 x dia 0.1") (penetration)	fixed, stainless steel 105 x dia 3 mm (penetration)	fixed, stainless steel 105 x dia 3 mm (liquid)	fixed, stainless steel 105 x dia 3 mm (liquid)
Battery Type / Life	(1) 1.5V / approx. 3000 hours of continuous use			
Environment	0 to 50°C (32 to 122°F); RH max 95%			
Dimensions / Weight	66 x 50 x 25 mm (2.6 x 2.0 x 1.0") / 50 g (1.8 oz.) - meter only			

ORDERING INFORMATION

HI 98501 (Checktemp®C) is supplied with penetration probe, protective cap, battery and instructions

HI 98505 (Checktemp®LC) is supplied with probe for liquid measurement, protective cap, battery and instructions

HI 98502 (Checktemp®F) is supplied with penetration probe, protective cap, battery and instructions

HI 98506 (Checktemp®LF) is supplied with probe for liquid measurement, protective cap, battery and instructions

Pocket Thermometers

with -50 to 150°C Range and ±1°C Accuracy

Compact Testers for a Variety of Applications

HI 98501-1 and HI 98509-1 are two models with the same technical characteristics, but designed for different applications.

HI 98501-1 is a compact meter with direct probe that is suitable for temperature measurements in semisolid samples and liquid testing.

HI 98509-1 is provided with a probe and a 1 meter (3.3') cable, that allows easy measurements in hard-to-reach locations. Moreover, the large LCD immediately displays the temperature value, making routine monitoring simple and fast.

These thermometers are the closest, digital alternative to traditional glass thermometers.



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SPECIFICATIONS	HI 98501-1	HI 98509-1
Range	-50.0 to 150.0°C	
Resolution	0.1°C	
Accuracy	±1°C	
Probe	stainless steel 105 mm x dia 3 mm (4.1 x dia 0.1")	stainless steel with 1 m (3.3') cable 160 mm x dia 3 mm (6.3 x dia 0.1")
Battery Type / Life	(1) 1.5V / approx. 3000 hours of use	(1) 1.5V AAA / approx. 3 years of use
Environment	0 to 50°C (32 to 122°F); RH max 95%	
Dimensions	66 x 50 x 25 mm (2.6 x 2.0 x 1.0")	106 x 58 x 19 mm (4.2 x 2.3 x 0.7")
Weight	50 g (1.8 oz.) - meter only	80 g (2.8 oz.) - meter only

ORDERING INFORMATION

HI 98501-1 is supplied with battery and instructions
HI 98509-1 is supplied with battery and instructions

HI 98509 • HI 98510

Pocket Thermometer

with Stainless Steel Probe with 1 m (3.3') Cable, ±0.3°C Accuracy and CAL CHECK™



The Checktemp®1 is ideal to check the temperature of meat

1 m flexible cable for Easy Measurement Readings

High Precision Thermometer Checktemp®1 is a high accuracy thermometer with a 1m (3.3') flexible cable between the meter and the stainless steel probe. This penetration probe is perfect for fast response in liquids, air, frozen and semisolid materials. These thermometers utilize a high-tech NTC thermistor sensor to measure the temperature. Thermistors make it possible to obtain extremely high accuracy in a very short period of time.

A CAL Check™ features has been incorporated into the Checktemp®1. Activate the "test" switch and this device will simulate an ice bath of 0.0°C (32.0°F) signal that is displayed on the LCD within a range of ±0.3°C (±0.5°F). This assures the user that the reading is reliable and accurate, every time.

The sharp-tip probe easily penetrates semisolid products such as fruits, vegetables and cheeses. Checktemp®1 makes routine controls are fast and simple for both incoming and outgoing goods. Constructed of AISI 316 stainless steel material, this probe is in compliance with food regulations.

Checktemp®1 is an ideal instrument for measuring temperature according to HACCP requirements.

Checktemp® Dip is also available with a weighted probe and flexible 3m cable, ideal for measurements in tanks.

- *Stainless steel probe with sharp tip for semi-solids*
- *Incorporated calibration test*
- *Ideal for HACCP requirements*

SPECIFICATIONS	HI 98509 Checktemp®1C	HI 98510 Checktemp®1F
Range	-50.0 to 150.0°C	-58.0 to 302.0°F
Resolution	0.1°C	0.1°F
Accuracy	±0.3°C (-20 to 90°C) / ±0.5°C (outside)	±0.5°F (-4 to 194°F) / ±1°F (outside)
Probe	stainless steel, 160 x dia 3 mm (6.3 x dia 0.1"), with 1 m (3.3') cable	
Battery Type / Life	(1) 1.5V AAA / approx. 3 years of use	
Environment	0 to 50°C (32 to 122°F); RH max 95%	
Dimensions	106 x 58 x 19 mm (4.2 x 2.3 x 0.7")	
Weight	80 g (2.8 oz.) - meter only	

ORDERING INFORMATION

HI 98509 (Checktemp®1 C) is supplied with battery and instructions

HI 98509-01 (Checktemp® Dip C) is supplied complete with weighted probe with 3 m (10') cable, battery and instructions

HI 98510 (Checktemp®1 F) is supplied complete with battery and instructions.

HI 98510-01 (Checktemp® Dip F) is supplied complete with weighted probe with 3 m (10') cable, battery and instructions.

ACCESSORIES

HI 740024 Base for Checktemp® 1



HI 740024 Base for Checktemp®1

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Pocket Thermometer with Folding Probe—Ideal for Spot Checks

Checktemp® 4 provides practical solutions to temperature measurement for food service.

Special attention was given to the ergonomic form of Checktemp® 4. This thermometer fits comfortably and securely in your hand. An oversized LCD, on the side of the handle is easy to see and read. The fast responding, fold-away probe is made of high quality, stainless steel and can penetrate semi-frozen and semi-solid foods like meats, ice cream and cheeses. When you are finished using your Checktemp® 4, wipe the probe clean and fold it away. Checktemp® 4 automatically turns OFF so you can safely carry it in your pocket.



CAL CHECK™

As you unfold the stainless steel probe, the Checktemp® 4 automatically turns ON and immediately performs a calibration test. This unique HANNA feature—CAL CHECK™, provides the security of knowing you have accurate measurements. CAL CHECK™ also lets you know if your battery level is low or if your thermometer requires recalibration.

- *High accuracy*
- *Enables measurment at different angles*
- *Stainless steel folding probe with penetration tip*
- *Ergonomic*
- *Incorporated calibration test*
- *Auto shut-off*

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SPECIFICATIONS	HI 151-00 (Checktemp® 4C)	HI 151-01 (Checktemp® 4F)
Range	-50.0 to 220°C	-58.0 to 428°F
Resolution	0.1°C (-50.0 to 199.9°C); 1°C (200 to 220°C)	0.1°F (-58.0 to 199.9°F); 1°F (200 to 428°F)
Accuracy	±0.3°C ±1 digit (-20.0 to 90.0°C); ±1% F.S. ±1 digit (outside)	±0.5°F ±1 digit (-4.0 to 194.0°F); ±1% F.S. ±1 digit (outside)
Calibration Check	automatic, at start-up	
Probe	stainless steel, with penetration tip, 117 x dia 3.5 mm (4.6 x dia 0.14")	
Battery Type / Life	(1) 1.5V AA / approx. 25000 hours; auto-off after 8 minutes of non-use	
Environment	0 to 50°C (32 to 122°F); RH max 95%	
Dimensions	165 x 50 x 20 mm (6.5 x 2.0 x 0.8")	
Weight	100 g (3.5 oz.)	

ORDERING INFORMATION

HI 151-00 (Checktemp®4 C) is supplied complete with battery and instructions
HI 151-01 (Checktemp®4 F) is supplied complete with battery and instructions

HI 145

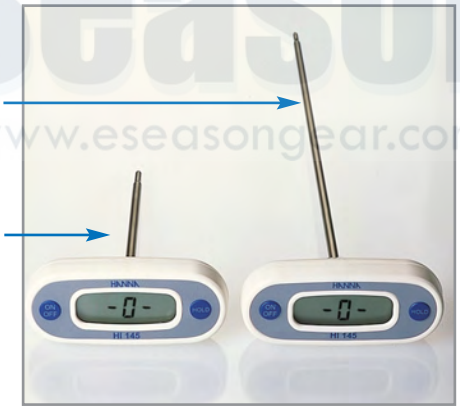
Pocket Thermometers

Designed for HACCP Control with Cal-Check™ and ±0.3°C Accuracy



HI 145-20 (°C) — HI 145-30 (°F):
Stainless steel probe
300 x dia 5 mm

HI 145-00 (°C) — HI 145-01 (°F):
Stainless steel probe
125 x dia 5 mm



T-shaped HACCP Thermometer

HI 145 thermometers were developed for HACCP programs that need high standards of performance with simplicity-of-use. The durable T-shaped handle fits comfortably in hand and is ideal for applications where applied force is necessary for insertion, such as with incoming meat inspection and semi-frozen foods. The LCD positioned on top of the meter allows for easy reading in cooking applications.

The HI 145 thermometer is idealy suited for monitoring incoming merchandise and food storage, as well as applications in food preparation, and during cooking.

HI 145-00 and **HI 145-01** are equipped with a 5" (125mm) long AISI 316 stainless steel probe. The sharp conical tip provides fast response and improved accuracy over the entire range.

HI 145-20 and **HI 145-30** are supplied with a 12" (300mm) long stainless steel probe; ideal for monitoring hot liquids, such as deep frying and soup preparation.

With an automatic CAL CHECK™ feature, the HI 145 series performs a self check of its calibration status and displays it on the LCD. With this feature, accuracy is assured and you can have confidence in your readings.

- *T-shaped body for easy LCD reading*
- *2 probe lengths available*
- *CAL CHECK™ equipped*
- *Ideal for semi-solids, deep fryers and soup preparation*
- *Exceptionally long battery life of over a year*

SPECIFICATIONS	HI 145-00	HI 145-01	HI 145-20	HI 145-30
Range	-50.0 to 220°C	-58.0 to 428.0°F	-50.0 to 220°C	-58.0 to 428.0°F
Resolution	0.1°C (-50.0 to 199.9°C); 1°C (200 to 220°C)	0.1°F (-58.0 to 199.9°F); 1°F (200 to 428°F)	0.1°C (-50.0 to 199.9°C); 1°C (200 to 220°C)	0.1°F (-58.0 to 199.9°F); 1°F (200 to 428°F)
Accuracy	±0.3°C (-20 to 90°C); ±0.4% F.S. (outside)	±0.6°F (-4 to 194°F); ±0.4% F.S. (outside)	±0.3°C (-20 to 90°C) ±0.4% F.S. (outside)	±0.6°F (-4 to 194°F); ±0.4% F.S. (outside)
Probe	stainless steel 125 mm x dia 5 mm (4.9 x dia 0.2")		stainless steel 300 mm x dia 5 mm (11.8 x dia 0.2")	
Battery Type / Life	1 x 1.5V AAA / approx. 10000 hours of continuous use; auto-off after 8 minutes of non-use			
Environment	-10 to 50°C (14 to 122°F); RH max 95%			
Dimensions	92 x 165 x 38 mm		92 x 340 x 38 mm	
Weight	65 g (2.3 oz.)		80 g (2.8 oz.)	

ORDERING INFORMATION

All models of the HI 145 series are supplied complete with battery and instructions
HI 145-00 with 125 mm probe
HI 145-01 with 125 mm probe
HI 145-20 with 300 mm probe
HI 145-30 with 300 mm probe

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Checkfridge™ Pocket Thermometer

with Magnetic Backing, Remote Thermistor Sensor, ±0.3°C Accuracy and CAL CHECK™

Monitor Temperature Inside, Read Results Outside

Few manufacturers have given any thought to providing the user a convenient means to monitor internal temperature conditions of a refrigerator or freezer from the outside. When contents of freezer and refrigeration units need to be monitored to ensure safety and preservation, you need a thermometer that is as accurate and easy to read.

The HI 147 is the ideal choice when you need accurate and reliable temperature monitoring.

How do you know when the reading on the thermometer is correct? You could make an ice point or slurry. Even then there could be several degrees difference in the real vs theoretical temperatures. With HI 147, you do not need to waste time preparing and ice bath for making these tests. Its unique CAL CHECK™ feature can do it for you. Conveniently located on the face of the thermometer is a TEST switch. Engage the switch and the HI 147 performs an internal calibration check. In only a few seconds, you see the results on the large LCD. Return the switch to the READ position and the HI 147 returns to its normal measuring status.

- *Magnetic backing*
- *Perfect for refrigerator and freezer monitoring*
- *Food grade stainless steel thermistor probe on 1m (3.3') cable*
- *Fast Response*
- *CAL CHECK™ verification*
- *Low battery warning*
- *Small and lightweight*



SPECIFICATIONS	HI 147-00 Checkfridge™ C	HI 147-01 Checkfridge™ F
Range	-50.0 to 150.0°C	-58.0 to 302.0°F
Resolution	0.1°C	0.1°F (-58.0 to 199.9°F) 1°F (200 to 302°F)
Accuracy	±0.3°C (-20 to 90°C); ±0.5°C (outside)	±0.6°F (-4 to 194°F); ±1°F (outside)
Calibration Check	manual, through switch	
Probe	stainless steel, general purpose; 40 x dia 5 mm (1.6 x dia 0.2"); 1 m (3.3') cable	
Battery Type / Life	(1) 1.5V AAA / approx. 3 years of use	
Environment	0 to 50°C (32 to 122°F); RH max 95%	
Dimensions (meter only)	93 x 39 x 31 mm (3.7 x 1.5 x 1.2")	
Weight	60 g (2.1 oz.)	

ORDERING INFORMATION

HI 147-00 (Checkfridge™ C) is supplied complete with battery and instructions
HI 147-01 (Checkfridge™ F) is supplied complete with battery and instructions

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Thermometers

An introduction to HANNA Thermometers

Another important and practical concern is the field of view. Infrared meters measure the average temperature of all objects in their field of view. To obtain an accurate result, it is important that the object completely fills the instrument's field of view and there are no obstacles between the meter and the object. The distance-to-target ratio, or the optic coefficient, is therefore an important consideration.



Reference Temperatures

In 1990, NIST established 17 fixed points of the International Temperature Scale (ITS-90) related to reproducible physical phenomena in nature. The ITS-90 Fixed Points are shown in the chart below:

Equilibrium state	K	°C
Vapor pressure point of helium	3 to 5	-270.15 to -268.19
Triple point of hydrogen	13.8033*	-259.346*
Boiling point of hydrogen at a pressure of 33.330.6 Pa	17.042*	-256.108*
Boiling point of equilibrium hydrogen	20.28*	-252.87*
Triple point of neon	27.102	-246.048
Triple point of oxygen	54.361	-218.789
Triple point of argon	83.8058	-189.3442
Triple point of mercury	234.3156	-38.8344
Triple point of water	273.16	0.01
Triple point of gallium	302.9146	29.7646
Melting point of indium	429.7485	156.5985
Melting point of tin	505.078	231.928
Melting point of zinc	692.677	419.527
Melting point of aluminum	933.473	660.323
Melting point of silver	1234.93	961.78
Melting point of gold	1337.33	1064.18
Melting point of copper	1357.77	1084.62

* Given for e-H2 , which is hydrogen at the equilibrium concentration of the ort and para molecular forms.

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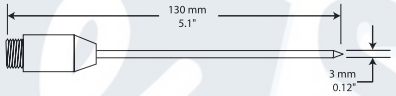
HI 98517 KEY® °C • HI 98518 KEY® °F

KEY® Pocket Thermometer

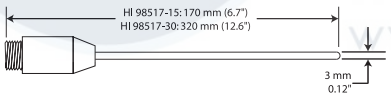
From -40 to 550°C in a Pocket Thermocouple Thermometer





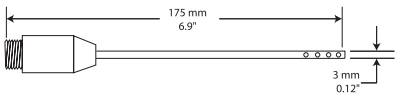
HI 98517-13
penetration/general purpose

K-type thermocouple probe supplied with KEY®. Application: liquid, air/gas, penetration of semisolids.



HI 98517-15 and HI 98517-30
liquid/general purpose

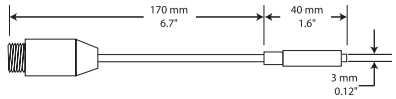
K-type thermocouple probe for KEY®. Application: liquids, air/gas.



HI 98517-11, air/gas

K-type thermocouple probe for KEY®.

Application: air/gas.



HI 98517-12, surface

K-type thermocouple probe for KEY®.

Application: solids, plates, furnaces, molds.

SPECIFICATIONS	HI 98517 (KEY®C)	HI 98518 (KEY®F)
Range	-40 to 550°C	-40 to 999°F
Resolution	1°C	1°F
Accuracy	±2°C	±4°F
Response Time	approx. 20 seconds in water (with HI 98517-13 probe, included)	
Battery Type / Life	4 x 1.5V / approx. 700 hours of continuous use	
Environment	0 to 50°C (32 to 122°F); RH max 95%	
Dimensions (meter only)	175 x 41 x 23 mm (6.2 x 1.4 x 0.8")	
Weight	78 g (3.0 oz.)	

Thermocouple Thermometer with Interchangeable Probe

The KEY® is a K-type thermocouple thermometer with an interchangeable probe for quick spot measurements. With a response time of less than 20 seconds in water, KEY is ideal for quality control and routine industrial temperature monitoring.

There are 5 interchangeable temperature probes available to meet your specific requirements.

In the HVAC field, gas and air can be monitored with the HI 98517-11 probe. The HI 98517-13 probe is for penetration and is included with the meter. It also provides a fast response typical of a thermocouple probe. HI 98517-15 and HI 98517-30 probes are for general liquid monitoring. The HI 98517-12 being a surface probe is made for machine shops, molding facilities and welding surfaces.

The casing of the meter is designed redesigned with an ergonomic and appealing shape. Each probe is constructed out of rugged AISI 316 stainless steel, that resists the harmful effects of chemicals and humid conditions.

HI 98517 (KEY®°C) provides temperature measurements in degrees Celsius, while the HI 98518 (KEY®°F) model reads in degrees Fahrenheit.

- *Ideal for spot measurements*
- *5 interchangeable stainless steel probes available*

ORDERING INFORMATION

HI 98517 (KEY®C) and **HI 98518** (KEY®F) are supplied with HI 98517-13 probe, batteries and instructions

PROBES

HI 98517-11 K-thermocouple probe for air/ gas
HI 98517-12 K-thermocouple probe for surfaces
HI 98517-13 K-thermocouple probe for penetration
HI 98517-15 K-thermocouple probe for liquid/general purpose, length 170 mm (6.7")
HI 98517-30 K-thermocouple probe for liquid/general purpose, length 320 mm (12.6")

Mount Right Over the Samples!

HI 146-00, HI 146-01 and the new waterproof HI 146-99 are high accuracy thermometers with a professional-grade probe and a flexible 2 m (6.6') cable. The CAL CHECK™ feature is incorporated into its function to allow you to confirm the accuracy of the meter any time.

You can monitor the exact temperature of any product continuously and easily observe it on the large LCD display.

With their compact and simplified design featuring with a fixed stainless steel probe and an optional probe holder, these thermometers ideal for monitoring the temperatures of liquids, semisolids and refrigerated food.

HI 146-00, HI 146-01 and HI 146-99 can be easily carried from station to station or installed in a fixed position utilizing the molded eye along and wall mount probe holder.

- *CAL CHECK®*
- *Hang above the samples or spot check*
- *Stainless steel temperature probe*
- *Waterproof (HI 146-99)*



Accurate Measurements with CAL CHECK®

In order to make sure that the meter is reporting the correct temperature, HI 146 has been designed with HANNA's exclusive CAL CHECK™ switch. By simply setting the switch from "READ" to "TEST" and without requiring any external equipment, users can ensure the accuracy of the meter. In the "TEST" mode, HI 146 shows 0.0 °C (or 32.0°F) ±0.3°C (±0.5°F) which is the accuracy of the meter. With this HANNA innovation, the accuracy can be checked throughout the life of the thermometer without requiring any accessories or additional investments.

ORDERING INFORMATION

HI 146-00, **HI 146-01** and **HI 146-99** are supplied with probe, battery and instructions

ACCESSORIES

HI 750146 Wall-mounted probe holder



HI 750146 Wall-Mounted Probe Holder

SPECIFICATIONS	HI 146-00	HI 146-01	HI 146-99
Range	-50.0 to 150.0°C	-58.0 to 302.0°F	-50.0 to 150.0°C
Resolution	0.1°C	0.1°F (-58.0 to 199.9 °F) 1°F (200 to 302 °F)	0.1°C
Accuracy	±0.3°C (-20 to 90°C) ±0.5°C (outside)	±0.5°F (4 to 194°C) ±1°F (outside)	±0.3°C (-20 to 90°C) ±0.5°C (outside)
Probe (fixed)	stainless steel, 160 x dia 3 mm (6.3 x dia 0.1"), 2 m (6.6') cable		
Battery type/life	1 x 1.5V AA / approx. 5 years		
Environment	0 to 50°C (32 to 122°F); RH max 95%		0 to 50°C; RH max 100%
Dimensions	86 x 110 x 43 mm (3.4 x 4.3 x 1.7")		
Weight	150 g (5.3 oz.)		

HI 97500

Portable Lux Meter

or Rapid Light Measurements in a Waterproof Case



Easily Perform Light Measurements

HI 97500 is a portable lux meter designed to perform light measurements with ease. The instrument is provided with a light sensor connected to the meter through a coaxial cable, allowing measurements from a distance, without any interference from the operator.

By simply pressing the RANGE key, it is possible to switch among three ranges and choose the best resolution according to the environment being tested. The HI 97500 lux meter has a rugged and water-resistant body for outdoor use without any problems.

The 9V battery and automatic shut-off feature guarantee about 200 hours of operation.

- *Three measurement ranges*
- *Light sensor attached to 1.5 meter coaxial cable*
- *Rugged, waterproof case*
- *Low-battery indicator*

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The Quality of Light

Quality of light is very important in the workplace, schools, greenhouses and public buildings. Too little light (or luminous intensity) affects the quantity and quality of performance of both people and crops. HANNA's light meter uses special optic filters to match the spectral sensitivity of the human eye.

Luminous intensity is measured and reported in foot-candles (ft-c) or in lux (lx). Light meters are commonly referred to as lux meters. One lux is equal to one lumen per square meter and one foot-candle is equal to one lumen per square foot. To convert measurements use the following formula:

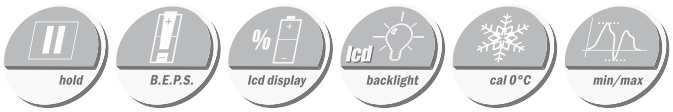
foot-candle = lux x 0.0929

lux = foot-candle x 10.764

SPECIFICATIONS	HI 97500
Range	0.001 to 1.999 Klux 0.01 to 19.99 Klux 0.1 to 199.9 Klux
Resolution	0.001 Klux 0.01 Klux 0.1 Klux
Accuracy	±6% of reading ±2 digits
Sensor	human-eye-response silicon photodiode with 1.5 m coaxial cable (fixed)
Battery Type / Life	1 x 9V alkaline / approx. 200 hours of continuous use; auto-off after 7 minutes of non-use
Environment	0 to 50°C (32 to 122°F); RH 100%
Dimensions	164 x 76 x 45 mm (6.5 x 3.0 x 1.8")
Weight	180 g (6.3 oz.)

ORDERING INFORMATION

HI 97500 is supplied with battery, protective case and instructions



HI 935005 • HI 935005N

K-Type Thermocouple Thermometers

Waterproof with Dual-level LCD

Thermometers with Extended battery Life

HI 935005 is a hand-held waterproof thermometer that uses a K-type sensor together with an advanced micro-processor to deliver accurate temperature measurement with an extraordinary 1600 hour battery life. Battery level indication with low battery warning and error prevention furnishes this meter with advanced battery management functions.

This unit displays current temperature along with the minimum and maximum extremes achieved during the session on a dual-level LCD. A HOLD button provides the user time to record readings. The °C/°F button instantly switches between the Celsius and Fahrenheit ranges.

For dimly lit areas, HI 935005N is your choice. HI 935005N features a user-activated backlight for low or no light conditions. The CAL button allows the operator to remove the combined meter and probe interchange error in an ice bath at 0°C, for added accuracy and reliability.

Select from a wide variety of interchangeable probes to meet your specific needs.

The HANNA exclusive shockproof rubber boots, HI 710007 and HI 710008 offer maximum impact protection.



HI 710007 Shockproof Rubber Boot

- *Dual ranges*
- *High accuracy + 0.2% Full Scale, excluding probe error*
- *Waterproof casing with ergonomic design*
- *Tactile rubber keys to prevent the ingress of substances*
- *Large dual level LCD displays high and low readings along with current temperature*
- *HOLD button freezes readings on the display*
- *Battery level indicator at startup*
- *Low battery warning with BEPS*
- *Long battery life of 1600 hours*
- *Optional HI 710007 (blue) or HI 710008 (orange) rubber boot available*
- *Backlit Display (HI 935005N)*
- *Calibration feature (HI 935005N)*

SPECIFICATIONS	HI 935005	HI 935005N
Range	-50.0 to 199.9°C and 200 to 1350°C; -58.0 to 399.9°F and 400 to 2462°F	
Resolution	0.1°C (-50.0 to 199.9°C) and 1°C (outside); 0.1°F (-58.0 to 399.9°F) and 1°F (outside)	
Accuracy	±0.2% F.S. (for 1 year, excluding probe error)	
Probe	K-thermocouple type, HI 766 series (not included)	
CAL Button	N/A	Yes
Backlit LCD	N/A	Yes
Battery Type / Life	(3) 1.5V AA / approx. 1600 hours of continuous use (with backlight off); HI 935005 only: auto-off selectable after 8 or 60 minutes of non-use (can be disabled)	
Environment	-10 to 50°C (14 to 122°F); RH max 100%	
Dimensions	150 x 80 x 36 mm (5.9 x 3.1 x 1.4")	
Weight	235 g (8.3 oz.)	

ORDERING INFORMATION

HI 935005 is supplied with batteries, protective case and instructions

HI 935005N is supplied with batteries, protective case and instructions

PROBES

HI 766C	Penetration K-type temperature probe with 1 m cable
HI 766D	Air K-type temperature probe with 1 m cable
HI 766E1	General purpose K-type temperature probe with 1 m cable

ACCESSORIES

HI 710007	Shockproof rubber boot, blue
HI 710008	Shockproof rubber boot, orange
HI 710018	Spare protective case

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HI 935002 • HI 935009

K-Type Thermocouple Thermometers

Waterproof, 2-Channel Meters



HI 710008 Shockproof Rubber Boot

K-type thermocouple probes should be ordered separately to meet your specific application.

SPECIFICATIONS	HI 935002	HI 935009
Range	-50.0 to 199.9°C and 200 to 1350°C; -58.0 to 399.9°F and 400 to 2462°F	
Resolution	0.1°C (-50.0 to 199.9°C) and 1°C (outside); 0.1°F (-58.0 to 399.9°F) and 1°F (outside)	
Accuracy	±0.2% F.S. (for 1 year, excluding probe error)	
Probe	K-thermocouple type, HI 766 series (not included)	
CAL Button	N/A	Yes
Backlit LCD	N/A	Yes
Battery Type / Life	(3) 1.5V AA / approx. 1600 hours of continuous use (with backlight off); HI 935009only: auto-off selectable after 8 or 60 minutes of non-use (can be disabled)	
Environment	-10 to 50°C (14 to 122°F); RH max 100%	
Dimensions	150 x 80 x 36 mm (5.9 x 3.1 x 1.4")	
Weight	235 g (8.3 oz.)	

ORDERING INFORMATION

HI 935002 and **HI 935009** are supplied with 1.5V AA alkaline batteries (3) and instruction manual.

PROBES

HI 766C Penetration K-type temperature probe with 1 m cable

HI 766D Air K-type temperature probe with 1 m cable

HI 766E1 General purpose K-type temperature probe with 1 m cable

ACCESSORIES

HI 710007 Shockproof rubber boot, blue

HI 710008 Shockproof rubber boot, orange

HI 710018 Spare protective case

2-Channel Thermometers

HI 935002 and HI 935009 are waterproof 2-channel thermometers offering a wide temperature range and an extraordinary 1600 hours of battery life-ideal for extended lab and field use.

A dual-level LCD shows the current temperature and the high and low values for each channel. The difference between each channel can also be shown along with the current temperature at each probe or the high and low values of their differences. A relative value can be set on each channel and variances around that value can then be monitored.

These instruments enable you to see all continuously updating information on either channel. A HOLD button gives the user time to record the reading and HI 935009 will store that reading for later retrieval.

Both instruments read in °C and °F and if required, HI 935009 features a user calibration feature.

Remaining battery power is displayed at startup and is managed with a low battery warning signal and error prevention (BEPS).

HI 935009 has a selectable auto-off interval and a button activated backlight for low light conditions.

- *Dual ranges*
- *High accuracy + 0.2% Full Scale, excluding probe error*
- *Waterproof casing with ergonomic design*
- *Tactile rubber keys to prevent the ingress of substances*
- *Large dual level LCD displays high and low readings along with current temperature*
- *HOLD button freezes readings on the display*
- *Battery level indicator at startup*
- *Low battery warning with BEPS*
- *Long battery life of 1600 hours*
- *Optional HI 710007 (blue) or HI 710008 (orange) rubber boot available*
- *Backlit Display (HI 935009)*
- *Calibration feature (HI 935009)*

HANNA instruments

With Great Products, Come Great Results™

hold | B.E.P.S. | lcd display | backlight | audible | cal 0°C | min/max

HI 93531 • HI 93531N • HI 93531R

K-Type Thermocouple Thermometers

Waterproof with Min/Max and 0.1° Resolution

Monitor the Highest and Lowest Temperatures

These advanced waterproof thermometers are ideal when it's necessary to know the highest and lowest temperatures measured during a certain process.

HANNA has incorporated a dual-level LCD into these portable instruments. Along with the current reading, the highest and lowest temperature in the series can be assessed at a glance.

These thermometers can read with a resolution of 0.1 in the range of -149.9 to 999.9°C or -24.9 to 999.9°F. The meters are equipped with a HOLD function that freezes the current reading on the display. The °C/°F button will change between Celsius and Fahrenheit modes. Battery level is shown at startup and low battery warning with Battery Error Prevention System (BEPS) assure long periods of trouble-free use between battery changes.

HI 93531N also features a backlit LCD and can be calibrated at one point with a simple ice bath by pressing the CAL button.

HI 93531R features RS232 output for transferring measurements (once every 2 seconds) to devices provided with RS232 input (PC or printer).

- *Dual ranges*
- *High accuracy + 0.2% Full Scale, excluding probe error*
- *Waterproof casing with ergonomic design*
- *Tactile rubber keys to prevent the ingress of substances*
- *Large dual level LCD displays high and low readings along with current temperature*
- *HOLD button freezes readings on the display*
- *Battery level indicator at startup*
- *Low battery warning with BEPS*
- *Battery life of 500 hours*
- *Backlit Display (HI 93531N and HI 93531R)*
- *Calibration feature (HI 93531N and HI 93531R)*
- *PC and printer compatible (HI 93531R)*



HI 710007 Shockproof Rubber Boot



K-type thermocouple probes should be ordered separately to meet your specific application.

SPECIFICATIONS	HI 93531	HI 93531N	HI 93531R
Range	-200.0 to 999.9°C; 1000 to 1371°C -328.0 to 999.9°F; 1000 to 2500°F		
Resolution	0.1°C (-149.9 to 999.9°C); 0.2°C (-200.0 to -150.0°C); 1°C (outside) 0.1°F (-24.9 to 999.9°F); 0.2°F (-249.9 to -25.0°F); 0.3°F (-328.0 to -250.0°F); 1°F (outside)		
Accuracy	±0.5°C (-100.0 to 999.9°C); ±1°C (outside); ±1°F (-148.0 to 999.9°F); ±1.5°F (outside) (for 1 year, excluding probe error)		
Probe	K-thermocouple type, HI 766 series (not included)		
CAL Button	N/A	Yes	Yes
Backlit LCD	N/A	Yes	Yes
RS232	N/A	N/A	Yes
Battery Type / Life	(3) 1.5V AA / approx. 500 hours of continuous use (with backlight off); auto-off after 60 minutes of non-use (can be disabled)		
Environment	-10 to 50°C (14 to 122°F); RH max 100%		
Dimensions	150 x 80 x 36 mm (5.9 x 3.1 x 1.4")		
Weight	235 g (8.3 oz.)		

ORDERING INFORMATION

HI 93531, **HI 93531N** and, **HI 93531R** are supplied with 1.5V AA alkaline batteries (3) and instruction manual

PROBES

HI 766C	Penetration K-type temperature probe with 1 m cable
HI 766D	Air K-type temperature probe with 1 m cable
HI 766E1	General purpose K-type temperature probe with 1 m cable

ACCESSORIES

HI 710007	Shockproof rubber boot, blue
HI 710008	Shockproof rubber boot, orange
HI 710018	Spare protective case
HI 92000	Windows® compatible software
HI 920011	Serial cable for PC connection

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