

# TH-CALC™ Thermohygrometer

Model 7415

Operation and Service Manual



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**Service Policy**

Knowing that inoperative or defective instruments are as detrimental to TSI as they are to our customers, our service policy is designed to give prompt attention to any problems. If any malfunction is discovered, please contact your nearest sales office or representative, or call Customer Service department at (800) 874-2811 (USA), or (1) 651-490-2811 (International).

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# Chapter 1

## **Unpacking and Parts Identification**

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Carefully unpack the instrument and accessories from the shipping container. Check the individual parts against the list of components below. If anything is missing or damaged, notify TSI immediately.

1. Carrying case
2. Instrument



## Chapter 2

### Setting-up

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#### **Supplying Power to the Model 7415 TH-CALC Thermohygrometer**

The Model 7415 is powered with four size AA batteries.

##### **Installing the Batteries**

Insert four AA batteries as indicated by the diagram located on the inside of the battery compartment. The Model 7415 is designed to operate with either alkaline or NiMH rechargeable batteries, although it will not recharge NiMH batteries. Battery life will be shorter if NiMH batteries are used. Carbon-zinc batteries are not recommended because of the danger of battery acid leakage.

##### **Using the Probe**

The sensing probe relies on the diffusion of air. For best results, try to keep the sensing probe surrounded by moving air. Do *not* breathe on the probe, since it may take time for the probe to re-stabilize.





## Chapter 3

### Operation

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#### Keypad Functions

<b>ON/OFF Key</b>	Press to turn the Model 7415 on and off. During the power up sequence the display will show the following: Model Number, Serial Number, Software Revision and Last Date Calibrated.
<b>%RH Key</b>	Pressing this key changes the display to read relative humidity.
<b>WB Key</b>	Pressing this key changes the display to read wet bulb.
<b>°C Key</b>	Pressing this key changes the display to read temperature.
<b>Changing Units</b>	To change units for temperature and wet bulb, press and hold the unlabelled soft key for 5 seconds to bring up a menu. Then use the ▲▼ and ENTER key to select the units as °C or °F.



## Chapter 4

### Maintenance

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The Model 7415 requires very little maintenance to keep it performing well.

#### Recalibration

To maintain a high degree of accuracy in your measurements, we recommend that you return your Model 7415 to TSI for annual recalibration. Please contact one of TSI's offices or your local distributor to make service arrangements and to receive a Return Material Authorization (RMA) number. To fill out an online RMA form, visit TSI's website at <http://service.tsi.com>.

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#### Cases

If the instrument case or storage case needs cleaning, wipe it off with a soft cloth and isopropyl alcohol or a mild detergent. *Never* immerse the Model 7415. If the enclosure of the Model 7415, it must be replaced immediately to prevent access to hazardous voltage.

#### Storage

Remove the batteries when storing the unit for more than one month to prevent damage due to battery leakage.



# Chapter 5

## Troubleshooting

Table 5-1 lists the symptoms, possible causes, and recommended solutions for common problems encountered with the Model 7415. If your symptom is not listed, or if none of the solutions solves your problem, please contact TSI.

**Table 5-1: Troubleshooting the Model 7415**

Symptom	Possible Causes	Corrective Action
No Display	Unit not turned on	Switch unit on.
	Low or dead batteries	Replace batteries.
	Dirty battery contacts	Clean the battery contacts.
Temp. initially reads high or low	Temperature sensor is still adjusting to temperature	Allow sufficient time for the temperature to stabilize.
Humidity reading near zero or not believable	Probe exposed to intense light	Shade the probe while taking samples.
Instrument Error message appears	Fault in instrument	Factory service required on instrument.

### **WARNING!**

Remove the probe from excessive temperature immediately: excessive heat can damage the sensor. Operating temperature limits can be found in [Appendix A, Specifications](#).



# Appendix A

## Specifications

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Specifications are subject to change without notice.

### Temperature

Range	32 to 140°F (0 to 60°C)
Accuracy <sup>1</sup>	1.0°F (±0.6°C)
Resolution	0.1°F (0.1°C)
Response time	30 seconds (90% of final value, air velocity at 2 m/s)
Display units	°F or °C (user selectable)
Type	Thermistor

### Humidity

Range	5 to 95% RH
Accuracy <sup>2</sup>	±3% RH (includes ±1% hysteresis.)
Resolution	0.1% RH
Response time	20 seconds (for 63% of final value)
Sensor type	Thin-film capacitive

### Instrument Temperature Range:

Operating (Electronics):	40 to 113°F (5 to 45°C)
Operating (Probe):	14 to 140°F (-10 to 60°C)
Storage:	-4 to 140°F (-20 to 60°C)

### Instrument Operating Conditions:

Altitude up to 4000 meters  
Relative humidity up to 80% RH, non-condensing  
Pollution degree 1 in accordance with IEC 664  
Transient over voltage category II

### External Meter Dimensions:

3.3 in. × 7.0 in. × 1.8 in. (8.4 cm × 17.8 cm × 4.4 cm)

### Meter Weight:

Weight with Batteries: 0.6 lbs (0.27 kg)

### Power Requirements:

Four AA-size batteries (included)

<sup>1</sup> Accuracy with instrument case at 77°F (25°C), add uncertainty of 0.05°F/°F (0.05°C/°C) for change in instrument temperature.

<sup>2</sup> Accuracy with probe at 77°F (25°C). Add uncertainty of 0.1% RH/°F (0.1% RH/°C) for change in probe temperature. Includes 1% hysteresis.





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Contact your local TSI Distributor or visit our website **www.tsi.com** for more detailed specifications.