Indoor Air Quality

Thermohygrometer

Alnor® Model TH720
AIRFLOW™ Model RH720

Operation and Service Manual

TSI | ALNOR

TSI | AIRFLOW™ INSTRUMENTS

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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 +44 (0) 149 4 459200 (UK), (800) 874-2811 (USA), or (1) 651-490-2811 (International).

CONTENTS

Chapter 1

Unpacking and Parts Identification

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
3. USB cable
4. CD-ROM with downloading software
5. Calibration collar

Chapter 2

Setting-up

Supplying Power to the Alnor TH720/AIRFLOW RH720

The Alnor TH720/AIRFLOW RH720 can be powered in one of two ways: four size AA batteries or the optional AC adapter.

Installing the Batteries

Insert four AA batteries as indicated by the diagram located on the inside of the battery compartment. The Alnor TH720/AIRFLOW RH720 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 Optional AC Adapter

When using the AC adapter, the batteries (if installed) will be bypassed. Be sure to provide the correct voltage and frequency, which is marked on the back of the AC adapter. The AC adapter is not a battery charger.

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. Use the probe holder when in continuous data logging mode.

Connecting to a Computer

Use the Computer Interface USB Cable provided with the Alnor TH720/AIRFLOW RH720 to connect the instrument to a computer for downloading stored data or for remote polling. Connect the end labeled "COMPUTER" to the computer USB port and the other end to the data port of the Alnor TH720/AIRFLOW RH720.

For more information on how to download stored data see Chapter 3 section titled **LogDat2™ Downloading Software**.

Caution: This symbol is used to indicate that the data port of the Alnor TH720/AIRFLOW RH720 is **not** intended for connection to a public telecommunications network. Connect the USB data port only to another USB port.

Chapter 3

Operation

Keypad Functions

ON/OFF Key	Press to turn the Alnor TH720/AIRFLOW RH720 on and off. During the power up sequence the display will show the following: Model Number, Serial Number, Software Revision and Last Date Calibrated.
Arrow (▲▼) Keys	Press to scroll through choices while setting a parameter. Pressing the ▲▼ keys simultaneously will lock the keypad to prevent unauthorized adjustments to the instruments. To unlock the keypad, press the ▲▼ keys simultaneously.
↵ (Enter) Key	Press to accept a value or condition.
Arrow (◄ or ►) and Menu Soft Keys	Press arrow keys to change choices while setting a parameter. Press the Menu soft key to select the Menu selections, which are Display Setup, Settings, Data Logging, Applications, Calibration.

Common Terms

In this manual there are several terms that are used in different places. The following is a brief explanation of the meanings of those terms.

Sample	Consists of all of the measurement parameters stored at the same time.
Test ID	A group of samples. The statistics (average, minimum, maximum, and count) are calculated for each test ID. The maximum number of test IDs is 100.

Time Constant	The time constant is an averaging period. It is used to dampen the display. If you are experiencing fluctuating flows, a longer time constant will slow down those fluctuations. The display will update every second, but the displayed reading will be the average over the last time constant period. For example, if the time constant is 10 seconds, the display will update every second, but the displayed reading will be the average from the last 10 seconds. This is also referred to as a "moving average".
Logging Interval	The logging interval is a frequency period that the instrument will log readings. For example, if the logging interval is set to 30 minutes, each sample will be the average of the last 30 minutes.

Menus

DISPLAY SETUP

Display setup menu is where you will setup the desired parameters to be displayed on the running screen. With a parameter highlighted you can then use the ON soft key to have it show up on the running screen or select the OFF soft key to turn off the parameter. Use PRIMARY soft key to have a parameter show up on the running screen in a larger display. Only one parameter can be selected as a primary, and up to 2 secondary parameters can be selected at one time.

SETTINGS

Settings menu is where you can set the general settings. These include Language, Beeper, Select Units, Time Constant, Contrast, Set Time, Set Date, Time Format, Date Format, Number Format, Backlight and Auto Off. Use the ◄ or ➤ soft keys to scroll through the settings for each option and use the ↵ key to accept settings.

DATA LOGGING

Measurements

Measurements to be logged are independent of measurements on the display, and must therefore be selected under DATA LOGGING → Measurements.

Log Mode/Log Settings

You can set Log Mode to Manual, Auto-save, Cont-key or Cont-time.

- Manual mode does not automatically save data, but instead prompts the user to save a sample.
- In Auto-save mode, the user manually takes samples that are automatically logged.
- In Cont-key mode, the user starts taking readings and logging by pressing the ↵ key. The instrument will continue taking measurements until the ↵ key is pressed again.
- In Cont-time mode, the user starts taking readings and logging by pressing the ↵ key. The instrument will continue taking samples until a set period of time has passed.
- Auto-save, Cont-Key and Cont-time modes have the following additional Log Settings:

Mode	Log Settings
Auto-save	Log Interval
Cont-key	Log Interval
Cont-time	Log Interval
	Test Length

- Pressing the ▲▼ keys simultaneously will lock the keypad to prevent unauthorized adjustments to the instruments. To unlock the keypad, press the ▲▼ keys simultaneously.

Delete Data

Use this to delete all data, delete test or delete sample.

% Memory

This option displays the memory available. Delete All, under Delete Data, will clear memory and reset the memory available.

APPLICATIONS

You can choose % Outside Air in the Applications menu. After choosing this application, take measurements or enter data for each line.

LogDat2™ Downloading Software

The Alnor TH920/AIRFLOW RH920 comes with special software called LogDat2 Downloading Software, which is designed to provide you with maximum flexibility and power. To install this software on your computer, follow the instructions on the label of the LogDat2 CD-ROM.

To download data from the Alnor TH920/AIRFLOW RH920, connect the supplied computer interface USB cable to the Alnor TH920/AIRFLOW RH920 and to a computer USB port. Then run the LogDat2 downloading software. Within the LogDat2 software, either select the tests to be downloaded or double-click on a test to open it.

Chapter 4

Maintenance

The Alnor TH720/AIRFLOW RH720 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 Alnor TH720/AIRFLOW RH720 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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The Alnor TH720/AIRFLOW RH720 can also be recalibrated in the field using the CALIBRATION menu. These field adjustments are intended to make minor changes in calibration to match a user's calibration standards. The field adjustment is NOT intended as a complete calibration capability. For complete, multiple-point calibration and certification, the instrument must be returned to the factory.

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 Alnor TH720/AIRFLOW RH720. If the enclosure of the Alnor TH720/AIRFLOW RH720 or the AC adapter becomes broken, 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 Alnor TH720/AIRFLOW RH720. If your symptom is not listed, or if none of the solutions solves your problem, please contact TSI.

Table 5-1: Troubleshooting the Alnor TH720/AIRFLOW RH720

Symptom	Possible Causes	Corrective Action
No Display	Unit not turned on	Switch unit on.
	Low or dead batteries	Replace batteries or plug in AC adapter.
	Dirty battery contacts	Clean the battery contacts.
Instrument Error message appears	Memory is full	Download data if desired, then DELETE ALL memory.
	Fault in instrument	Factory service required on instrument.
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.

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

Specifications are subject to change without notice.

Temperature

Range:	32 to 140°F (0 to 60°C)
Accuracy[1]:	±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:	°C or °F (user selectable)
Type:	Thermistor

Humidity

Range:	5 to 95% RH
Accuracy[2]:	±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

Data Storage Capabilities:

Range:	12,700+ samples and 100 test IDs (one sample can contain fourteen measurement types)

Logging Interval:

Intervals:	1 second to 1 hour

Time Constant:

Intervals:	User selectable

External Meter Dimensions:

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

Meter Probe Dimensions:

Probe Length:	7.0 in. (17.8 cm)
Probe Diameter of Tip:	0.75 in. (19.0 mm)

Meter Weight:
Weight With Batteries: 0.6 lbs (0.27 kg)

Power Requirements:
Four AA-size batteries (included) or AC adapter (optional) 9 VDC, 300 mA, 4-18 watts (input voltage and frequency vary depending on which adapter is used)

[1] 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.

[2] 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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