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Overview

THUM - Temperature Humidity USB Monitor

The THUM is a true USB device to monitor temperature and relative humidity of an interior living, working, and storage spaces. The THUM is ideal for computer rooms, warehouses, and manufacturing areas, wherever accurate and reliable temperature and humidity monitoring is required.

The USB interface makes this sensor easy to install. The included software runs under Windows 98SE, 2000, XP. The software monitors the temperature and humidity storing the readings to an Access database. The software can send e-mail if an alarm point is reached to notify you of environment problems in the monitored area. The software also can generate a running graph of the last 20 data points. It can also export the data to csv(comma separated), dBase III, dBase IV, HTML, Excel, or another Access file so you can do your own analysis of the data. The program also generates html pages that can be automatically saved to your web server in order to provide world wide access to the current temperature and relative humidity data.

Feature list:

Accurate Temperature & Relative Humidity monitoring ($\pm 1^{\circ}\text{F}$ and 2% RH)

Inexpensive

USB for easy installation and support for new computer hardware

E-mails notifications if alarm set-points are reached

Can run an external program if alarm set-points are reached

Saves readings to an Access database

Can export data to a CSV file, dBase III, dBase IV, HTML, Excel, or another Access file

Generates graphs of the data

Sampling period of 30 seconds to 30 minutes

Runs in the system tray when minimized

Software included at no additional charge

Free software upgrades

Powered by the USB port - no additional power adapter needed

No calibration required

Temperature/RH sensor can be replaced easily without calibration

Calibration certificate for the Temp/RH sensor component included free

Small physical dimensions (2.8" x 2" x 1.25")

World wide access(using web server of your choice)

24 hour/day monitoring(provided computer and software is left running)

For Indoor Use Only

System Requirements

System Requirements

Processor	Pentium 300 MHz or faster
Operating System	Windows 98SE, 2000, or XP
Memory	32 MB RAM
Other	1 available USB 1.1 or 2 port

Internet Explorer 4.0 or greater

Web server and full time Internet connection required for World wide access

Note: MDAC 2.8 RTM and Jet 4 SP7 will be installed

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Installation

Note: MDAC 2.8 RTM and Jet 4 SP7 will be installed

1. Connect the THUM to an available USB port

A window should appear briefly stating that a USB Temp/Humidity Sensor has been found. The driver for the device comes with Windows, so it should complete the driver install without the user having to install any special drivers.

2. Install the THUM Software.

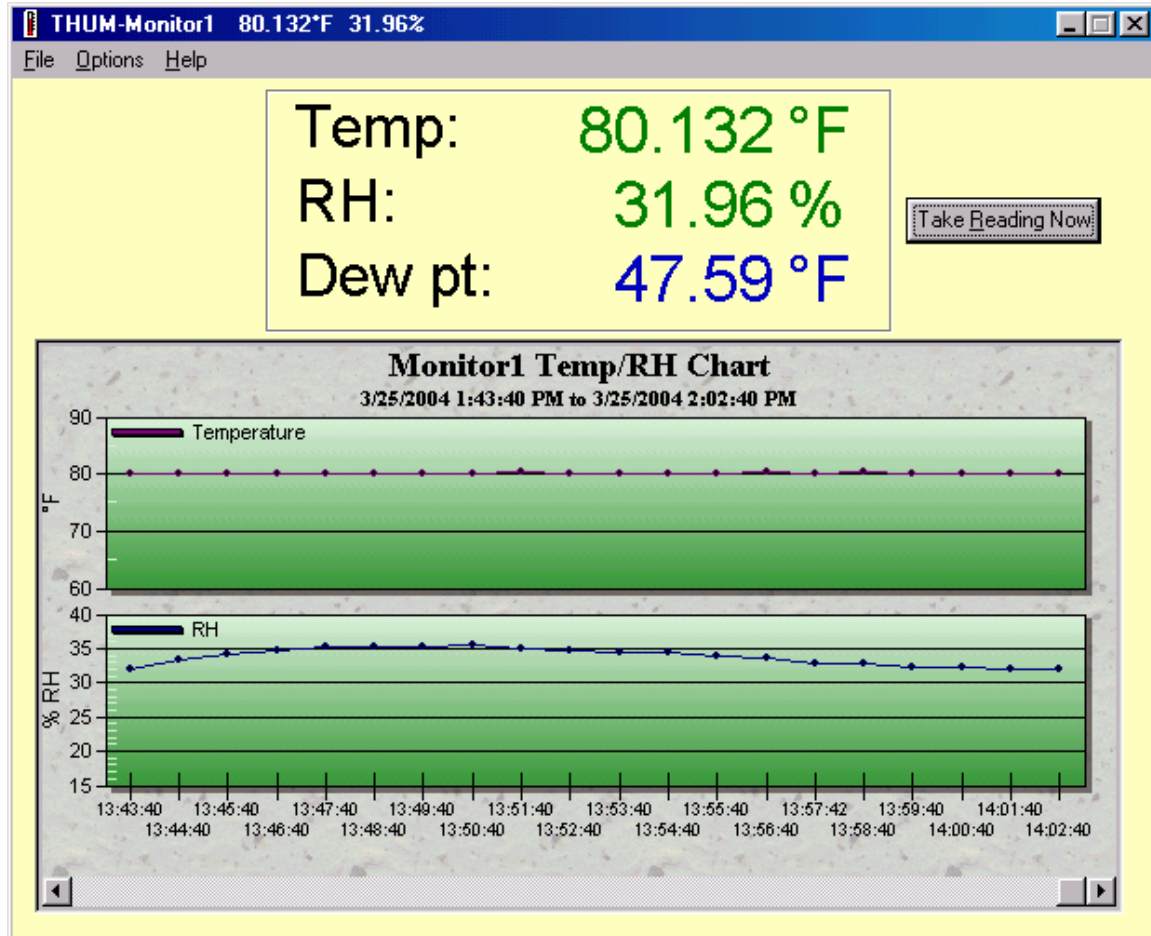
Note: On Windows 2000 and Windows XP, you must be logged in as Administrator. The THUM software can be installed by inserting the CD into a CD-ROM drive. The install program should start automatically. If it doesn't, go to Start, Run, and type D:\Setup.exe and press enter. D is the letter of your CD-ROM drive.

3. Follow the prompts given by the Installation program. After the install has completed, you will need to reboot the computer.

Settings

After the software has been installed and the computer has restarted, go ahead and log in if required. The THUM program should be running minimized in the system tray.

Double click on the Thermometer icon in the system tray to open the interface window.





Click on the Options>Show Options in the Menu bar.
The following window should be displayed

THUM - Options [X]

THUM Settings | Alarm Settings | E-mail Settings | FTP Settings

THUM Settings:

Database location: C:\Program Files\THUM\database 

HTML location: C:\Program Files\THUM\html 

Time between measurements: 60 seconds

°F °C

Monitor Number: 1

Monitor Name: Monitor1

Max database size: 100 MB

Temp chart Max limit: 90 °F

Temp chart Min limit: 60 °F

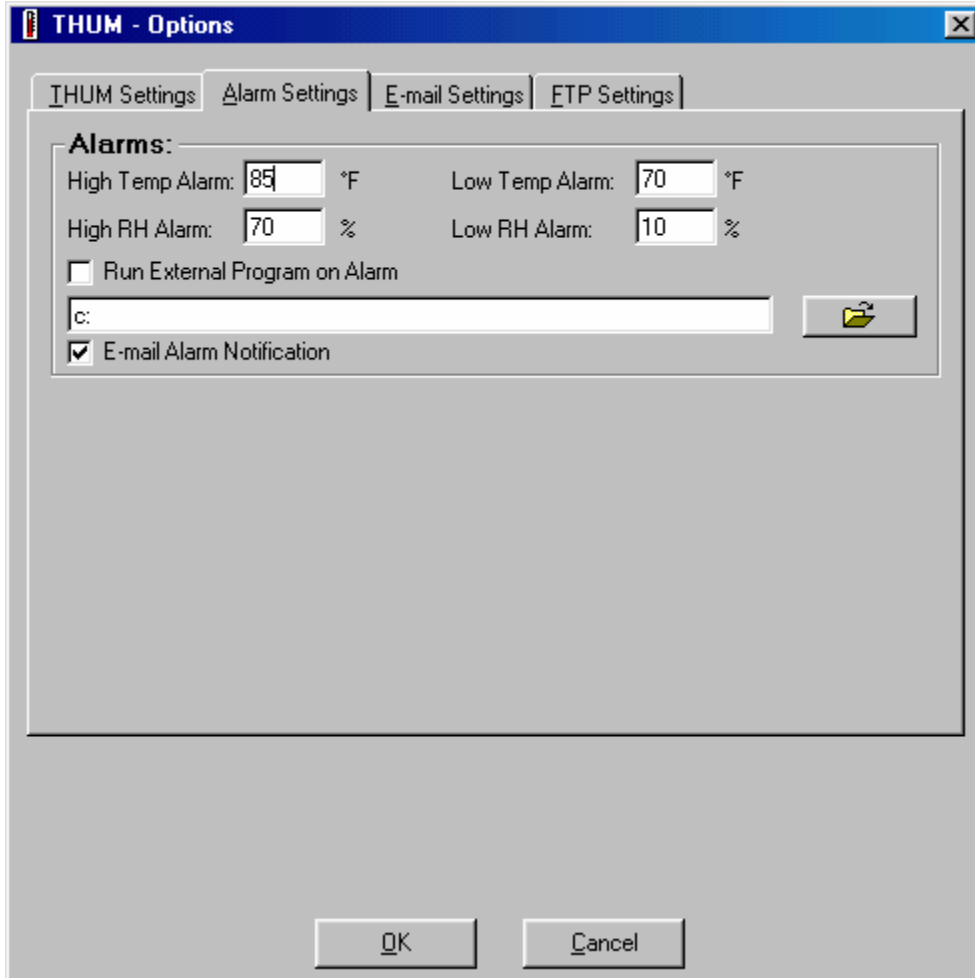
RH chart Max limit: 40 %

RH chart Min limit: 15 %

OK Cancel

Alarm Settings

On this page you can enter the limit ranges for when alarm status will be recorded. There are boxes to enter high and low temperature limits and high and low RH limits.



The screenshot shows a Windows-style dialog box titled "THUM - Options". It has four tabs: "THUM Settings", "Alarm Settings" (which is selected), "E-mail Settings", and "FTP Settings". The "Alarm Settings" tab contains the following elements:

- A section titled "Alarms:" containing four input fields:
 - High Temp Alarm: 85 °F
 - Low Temp Alarm: 70 °F
 - High RH Alarm: 70 %
 - Low RH Alarm: 10 %
- A checkbox labeled "Run External Program on Alarm" which is currently unchecked.
- A text input field containing "c:" with a folder icon button to its right.
- A checkbox labeled "E-mail Alarm Notification" which is currently checked.

At the bottom of the dialog box are two buttons: "OK" and "Cancel".

Run External Program on Alarm

If this box is checked, the THUM will run any external program with a valid path listed in the box below when an alarm limit is reached. This allows you to write your own custom program to specific tasks that you may require for alarm situations. An example may be a program to shut down servers during an alarm situation.

E-mail Alarm Notification

If this box is checked the THUM program will send an e-mail whenever an alarm limit is reached. It also sends an e-mail when the environment conditions have returned to normal. Be sure values on E-mail Settings tab have been set correctly in order for this to work properly.

E-mail Settings

The screenshot shows a Windows-style dialog box titled "THUM - Options". It has four tabs: "THUM Settings", "Alarm Settings", "E-mail Settings" (which is selected), and "ETP Settings". The "E-mail Settings" tab contains the following fields and controls:

- E-mail:** A section header.
- Send E-mail To:** A text box containing "username@yourcompany.com".
- E-mail From:** A text box containing "monitor1@yourcompany.com".
- Mail Server:** A text box containing "mail.yourcompany.com".
- Use Authentication**
- Username:** A text box containing "username".
- Password:** A text box containing "xxxxxxxx".
- Test E-mail** button.
- A large empty text area with scrollbars.
- OK** and **Cancel** buttons at the bottom.

Send E-mail To

Enter the e-mail address you wish alarm notifications to be sent to. Multiple e-mail addresses can be entered by putting a comma between the addresses.

E-mail From

Enter the address you wish to have the e-mail be from.

Mail Server

Enter your or your ISP's mail server's DNS name or IP address.

Use Authentication

If the mail server listed above requires Authentication, check this box and enter the username and password required.

Test E-mail

Once you have all of the e-mail settings entered, you can click this button to send a test e-mail.

Note: You must already have a full time network connection available to connect to your mail

server. The THUM will not automatically connect dialup Internet connections.

FTP Settings

The screenshot shows a Windows-style dialog box titled "THUM - Options". It has four tabs: "THUM Settings", "Alarm Settings", "E-mail Settings", and "FTP Settings", with the last one selected. The "FTP:" section contains the following elements:

- An unchecked checkbox labeled "Send Files via FTP".
- A text input field for "FTP Server Name" containing "ftp.yourcompany.com".
- A text input field for "FTP Directory" containing "/".
- A checked checkbox labeled "Use Anonymous".
- A text input field for "Username" containing "anonymous".
- A text input field for "Password" containing "monitor1@yourcompany.com".
- A "Test FTP" button.
- A large empty text area with scrollbars.

At the bottom of the dialog are "OK" and "Cancel" buttons.

Send Files via FTP

Check this option if you want the following files sent/uploaded to a FTP server. Temprh.htm, chart.jpg, temprh, config

These files will be uploaded every time a new reading is taken.

This option is usually used to send files to a web server located on another machine, but is still reachable via a full time network connection on the computer where the THUM is installed.

FTP Server Name

DNS Name or IP of the destination FTP server.

FTP directory

This is the directory on the FTP server where the files are to be uploaded to. Use / for the root directory.

Use Anonymous

Check this box if you want to use an anonymous login to the FTP server. If it is unchecked you will have to set the username and password in the boxes below.

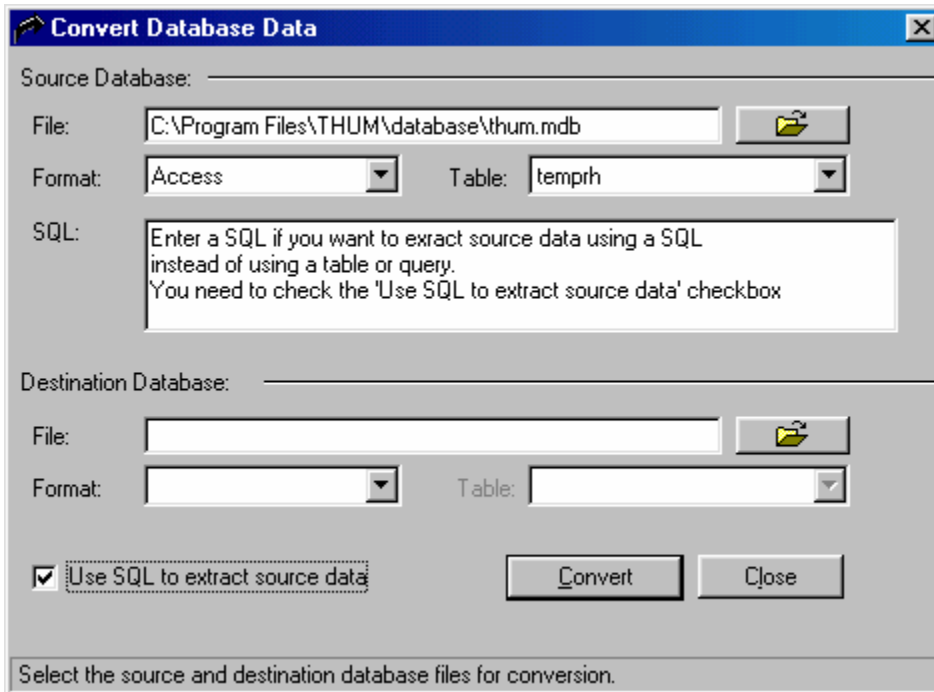
Test FTP

Once you have all of the FTP settings entered, you can click this button to send the files via FTP.

Note: You must already have a full time network connection available to connect to your FTP server. The THUM will not automatically connect dialup Internet connections.

Export/Data Conversion

A separate data export/conversion program has been included. It can be accessed by going to Options/Export Data on the menu bar of the THUM program. This utility will allow you to convert the database data to a different format. Currently, several formats, Access (*.mdb), dbase (*.dbf), Excel(*.xls), html (*.htm), and CSV (or text, *.csv, *.txt) are supported. You can easily turn a table or query data into a different format. Also, you can specify the data you want to convert using a SQL subquery. This will give you more flexibility in converting data.



The screenshot shows a Windows-style dialog box titled "Convert Database Data". It is divided into two main sections: "Source Database" and "Destination Database".

Source Database:

- File: C:\Program Files\THUM\database\thum.mdb (with a folder icon button)
- Format: Access (dropdown menu)
- Table: temprh (dropdown menu)
- SQL: A text area containing the instruction: "Enter a SQL if you want to extract source data using a SQL instead of using a table or query. You need to check the 'Use SQL to extract source data' checkbox".

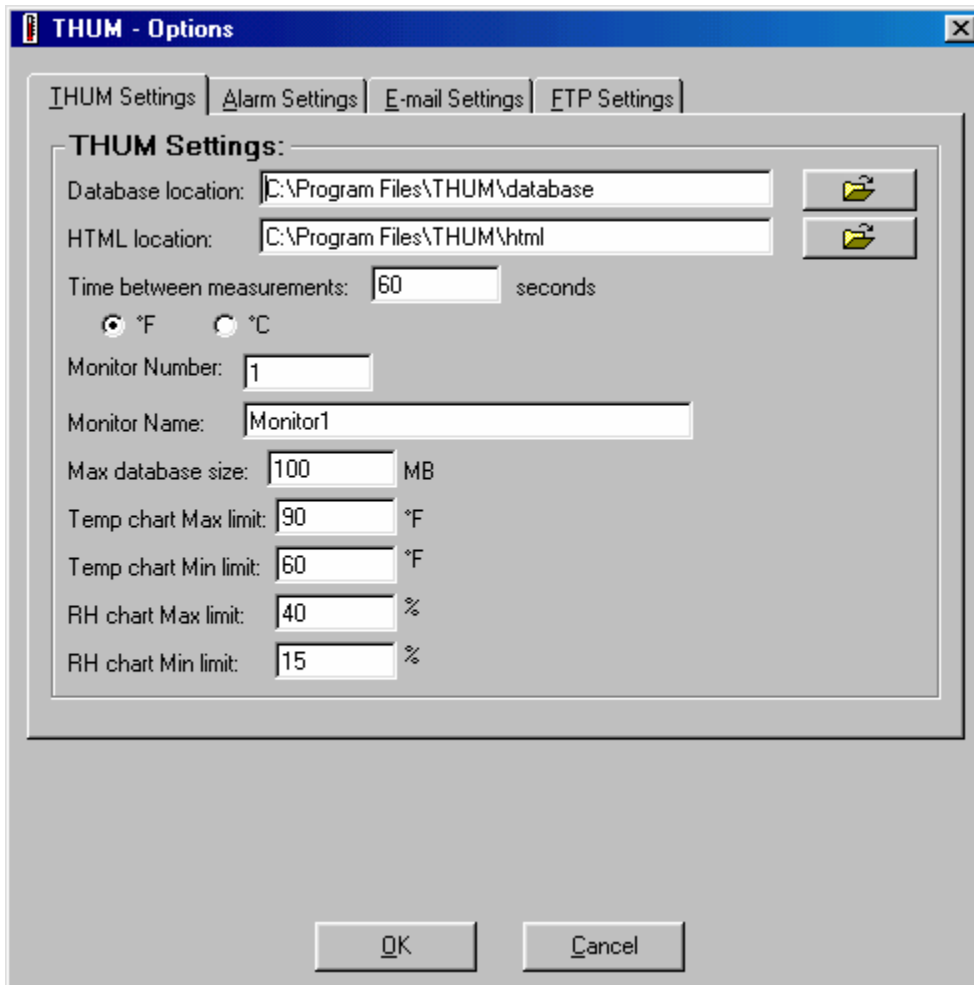
Destination Database:

- File: (empty text box with a folder icon button)
- Format: (empty dropdown menu)
- Table: (empty dropdown menu)

At the bottom of the dialog, there is a checked checkbox labeled "Use SQL to extract source data" and two buttons: "Convert" and "Close".

A status bar at the very bottom of the dialog contains the text: "Select the source and destination database files for conversion."

THUM Settings



Database location

This is where the Access database is located that stores the temperature/humidity data. The default is the installation directory of C:\Program Files\THUM\database

Note: Although a valid UNC can be used to have the THUM store data to a network location, it is strongly suggested to use a location on one of the local hard drives. If the network connection would be unavailable when the THUM attempts to save data it will cause an error, thus reducing the reliability of the THUM.

HTML location

This is where the output HTML and chart file will be saved for use with a web server. If the Web server is installed on the same computer, this location could be change to allow the files to be saved directly to a directory used by the web server.

The following files will be saved to this directory:

Temp_{rh}.htm -- the web page file

Chart.jpg - the chart graphic file

Temp_{rh} - this file contains pipe delimited data values of the last reading. It can be used by other programs to test or import the data.

Config - this file contains pipe delimited values of the current configuration information such as monitor name and alarm settings.

Time between measurements

This is the number of seconds between each reading the THUM takes. This value must be between 10 seconds and 216000 seconds (60 minutes).

Note: Some slower systems that are doing other CPU or hard drive intensive tasks may have problems taken readings every 10 seconds. On these systems it may be necessary to increase this value to 30 seconds or greater.

°F °C

The unit of temperature measurement to be used by the program.

Monitor Number

This is any integer number that can signify this particular THUM monitor. If you have more than one THUM and plan on exporting data from other units into database or spreadsheet, this can serve as an easy way to sort or query the data.

Monitor Name

Any Alpha-numeric name less than 49 characters. This is the user friendly name that will be displayed on the program title bar, the generated web page, and any e-mails sent by the THUM.

Max Database Size

This is the maximum size the Access database will be allowed to reach. Valid values are 1 to 900 MB. When the entered size is reached, the current file is renamed with today's date and a new Access file is created.

Temp Chart Max Limit

The maximum value that will be displayed on the chart.

Any value between -30 and 130°

Temp Chart Min Limit

The minimum value that will be displayed on the chart.

Any value between -50 and 120°

RH Chart Max Limit

The maximum value that will be displayed on the RH chart.

Any value between 10 and 100%

RH Chart Min Limit

The minimum value that will be displayed on the RH chart.

Any value between 0 and 90%

E-mail Templates

The E-mail Templates allow you to control how the alarm e-mails will look. These are located in C:\Program Files\THUM\template

You can change these files to contain any text you desire. Any place where you want the THUM to enter its dynamic information when the e-mail is generated, you enter one of the command words listed below. You can use the included alarmemail.txt and okemail.txt as guides.

Note: The commands must have the start and stop # symbols and be in upper case.

Commands

#FAILTYPE# -- States whether the last reading failed for temperature or RH. If both temperature and RH fail, it will state a temperature failure.

#MONITORNAME# -- Monitor name entered in the THUM Settings

#DATETIME# -- Date and Time of the last reading

#TEMP# -- Last temperature reading

#UNIT# -- Displays either a F or a C depending on the unit selected in the THUM Settings

#RH# -- Last RH reading

#DP# -- Last Dew Point reading

#TEMPALARMHIGH# -- Displays the high alarm setting

#TEMPALARMLOW# -- Displays the low alarm setting

#RHALARMHIGH# -- Displays the high RH setting

#RHALARMLOW# -- Displays the low RH setting

Web Page Template

The Web Page Template allows you to control how the temprh.htm file will look when viewed in a web browser. It is located in
C:\Program Files\THUM\template

You can change this file to contain any html or other text you desire. Any place where you want the THUM to enter its dynamic information when the output temprh.htm file is created you enter one of the command words listed below. You can use the include template.htm as a guide.

Note: The commands must have the start and stop # symbols and be in upper case.

Commands

#ALARMCHECK# -- Add this command to the top of the file. If this command is present the THUM will change the font color of #TEMP# or #RH# if they exceed the current alarm limits.

#MONITORNAME# -- Monitor name entered in the THUM Settings

#DATETIME# -- Date and Time of the last reading

#TEMP# -- Last temperature reading

#UNIT# -- Displays either a F or a C depending on the unit selected in the THUM Settings

#RH# -- Last RH reading

#DP# -- Last Dew Point reading

#TEMPALARMHIGH# -- Displays the high alarm setting

#TEMPALARMLOW# -- Displays the low alarm setting

#RHALARMHIGH# -- Displays the high RH setting

#RHALARMLOW# -- Displays the low RH setting

Temprh file

Temprh - This file contains a simple ASCII string of HTML-free pipe-delimited data values of the last reading. It can be used by other programs to test or import the data. This URL is handy for those wishing to write their own software interface to simply and quickly obtain the temperatures and incorporate them into their existing Network Management Software. If the html files are being served by a web server you can access the file by a command similar to the following: **<http://webservice.com/temprh>**

The following is an example of what would be returned:
Monitor1|3/20/2004 10:44:46 PM|77.360|29.20|42.83|False

Fields returned are:
MonitorName|Date-Time of last reading|Last Temp reading|Last RH reading|Last Dew Point reading|Alarm status

Config file

Config - This file contains a simple ASCII string of HTML-free pipe-delimited values of the current configuration information such as monitor name and alarm settings. If the html files are being served by a web server you can access the file by a command similar to the following:
<http://webserver.com/config>

The following is an example of what would be returned:

```
1|Monitor1|F|HighTempAlarm|85|LowTempAlarm|70|HighRHAlarm|70|LowRhAlarm|10
```

Warranty/Legal Disclaimer

Warranty

Full 30 day Warranty on the THUM

What is Covered: Any defect in the THUM that is the result of a defect in materials or workmanship, and any defect that is the result of normal operation of the THUM.

For How Long: For 30 days from the date of purchase of your THUM

What Practical Solutions Will Do: Repair, or if repair is not possible, replace your THUM.

How To Get Service: Contact Practical Solutions www.practsol.com support@practsol.com to describe the nature of the problem. If it is determined that a return is required, an RMA will be issued.

How State Law Relates to This Warranty: This warranty gives you specific legal rights, and you may have other rights which vary from state to state.

Legal Disclaimer

THE THUM IS A MONITORING DEVICE THAT IS INTENDED TO BE USED AS PART OF AN OVERALL ENVIRONMENTAL MONITORING STRATEGY. THE FOREGOING WARRANTIES ARE IN LIEU OF AND PRACTICAL SOLUTIONS HEREBY DISCLAIMS ALL OTHER WARRANTIES, EXPRESSED OR IMPLIED, INCLUDING BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE. IN NO EVENT WILL PRACTICAL SOLUTIONS (OR ITS SUBSIDIARIES) OR ANY OF SUCH PARTIES OFFICERS, DIRECTORS, EMPLOYEES OR AGENTS BE LIABLE FOR DAMAGES ARISING FROM PERFORMANCE OR NONPERFORMANCE OF THE THUM, OR ANY LOST PROFITS, LOST SAVINGS, OR OTHER SPECIAL, INCIDENTAL, INDIRECT OR CONSEQUENTIAL DAMAGES ARISING OUT OF THE USE OF, OR INABILITY TO USE, THE HARDWARE, EVEN IF PRACTICAL SOLUTIONS HAS BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES. PRACTICAL SOLUTIONS' AGGREGATE LIABILITY FOR ANY DAMAGES FOR ANY CAUSE OR CAUSES WHATSOEVER, REGARDLESS OF THE FORM OF ACTION, WHETHER IN CONTRACT OR IN TORT (INCLUDING CLAIMS BASED ON NEGLIGENCE), SHALL BE LIMITED TO THE AMOUNT PAID TO PRACTICAL SOLUTIONS FOR THE THUM, OR COMPONENT THEREOF, RESPONSIBLE FOR SUCH DAMAGES.

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