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 2000, XP, Vista, 2003 or 2008 server. 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 (±1°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 as a Windows Service
Powered by the USB port - no additional power adapter needed
No calibration required
Temperature/RH sensor can be replaced easily without calibration
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

Procesor	Pentium 600 MHz or faster
Operating System	Windows 2000, XP, Vista, 2003, 2008
Memory	256 MB RAM
Other	1 available USB 1.1 or USB 2 port

Internet Explorer 6.0 or greater
Web server and full time Internet connection required for World wide access

Note: MDAC 2.8 RTM and Jet 4 SP7 are recommended options for 2000 or XP SP1 during the install

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Installation for Windows

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. The green LED should light after the THUM has been initialized.

2. Install the THUM Software.
Note: You must be logged in as Administrator to install. 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:\THUMSetup.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.
Note: MDAC 2.8 RTM and Jet 4 SP7 should be unchecked when installing on XP SP2 or SP3, Vista, 2003, or 2008.

4. After the install completes, the THUM Service(THUMsvc) needs to be started. The installation program installs the service and sets it to start automatically. The THUM Service will start automatically after a reboot.

5. If you have a firewall enabled on your computer, be sure to create exceptions for thumsvc.exe and thum.exe.

NOTE 1: The computer must be turned on and Standby, Sleep, or Hibernate settings turned off in order for the THUM to take continuous readings. The THUM can **Not** take readings if the computer it is connect to goes into any type of Standby, Sleep, or Hibernate mode.

NOTE 2: Because the software runs as a service a user does **Not** need to be logged into Windows in order for the THUM to take readings.

6. If you will be using a Microsoft SQL server to store the data. Run the "THUM Database Deploy.exe" on your SQL 2005 or 2008 server. It creates the THUM database on the server. The database is created with a user named "thum" and password of "d3f@ultPWD" for access to the database. The SQL server must be setup in the THUM software Options.

System Requirements

Processor	Pentium 600 MHz or faster
Operating System	Windows 2000, XP, Vista, 2003, 2008 server
Memory	256 MB RAM
Other	1 available USB 1.1 or 2 port

Internet Explorer 6.0 or greater
Web server and full time Internet connection required for World wide access
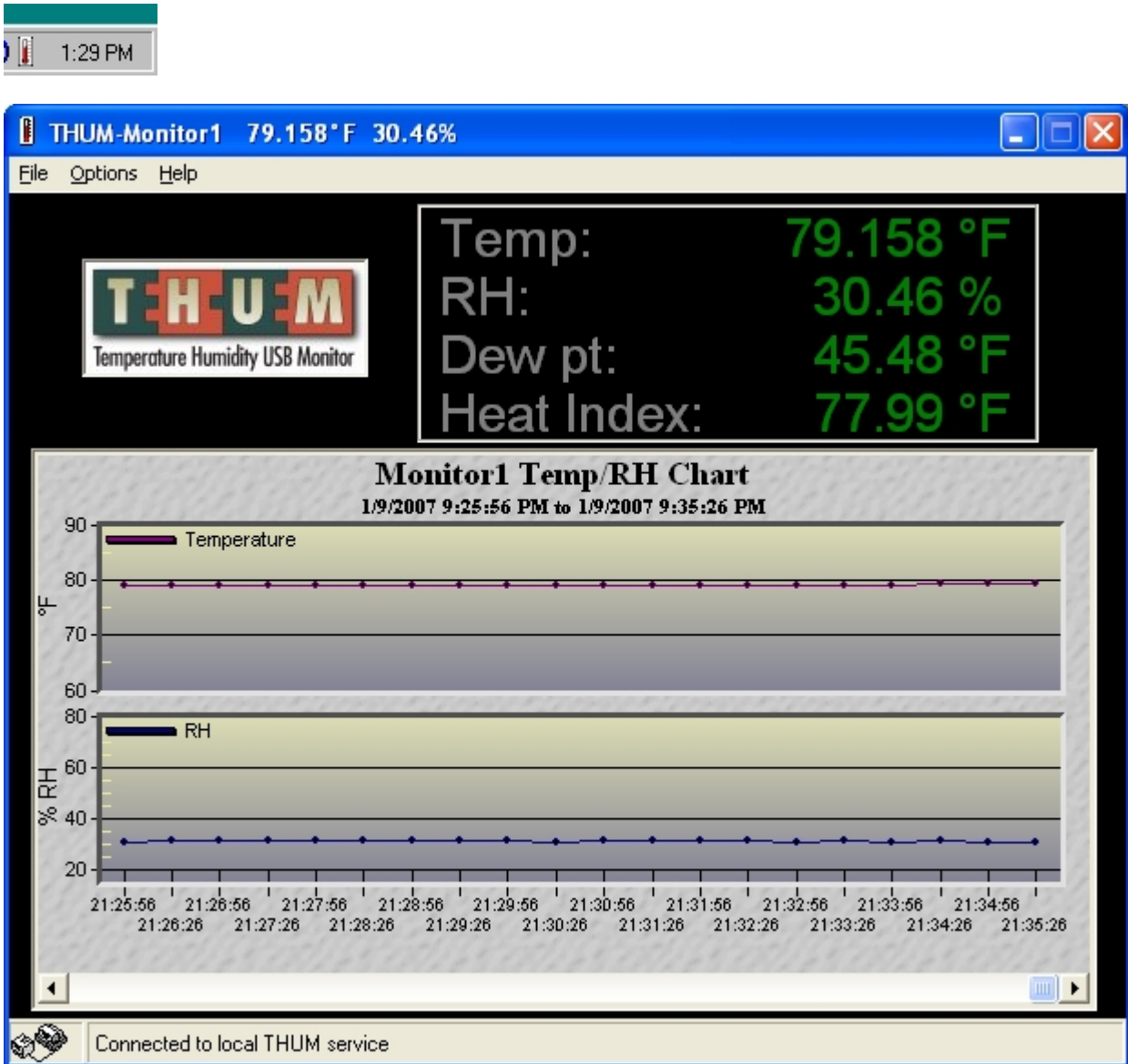
Mac and Linux versions can be downloaded from
http://www.practicaldesign.com/downloads.htm

Support
If you are having problems with the THUM please contact Practical Design Group, LLC by

going to www.practicaldesign.com or sending e-mail to support@practicaldesign.com
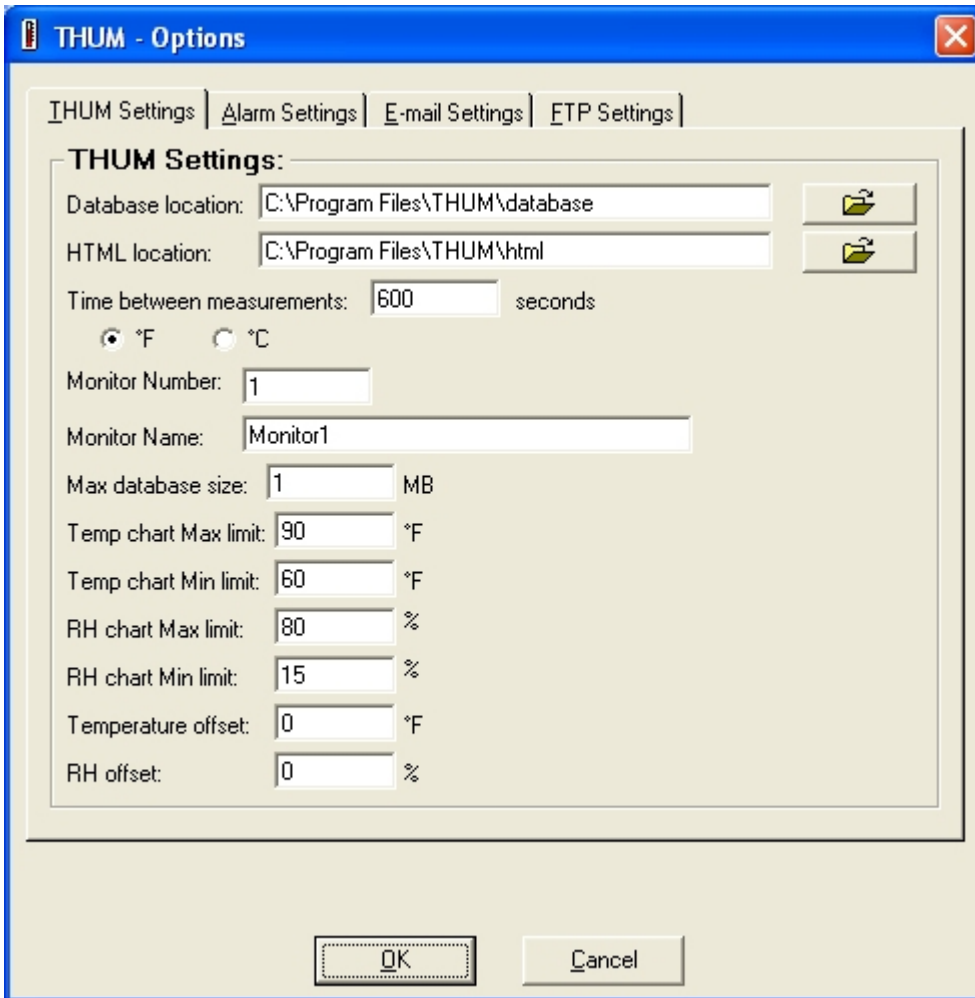
Settings

After the software has been install 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.

THUM Settings

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

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. Also the THUM service runs under the Local System account which does not have access to network shares.

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:
Temprh.htm -- the web page file
Chart.jpg - the chart graphic file
Temprh - 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 be 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 server 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 display 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.
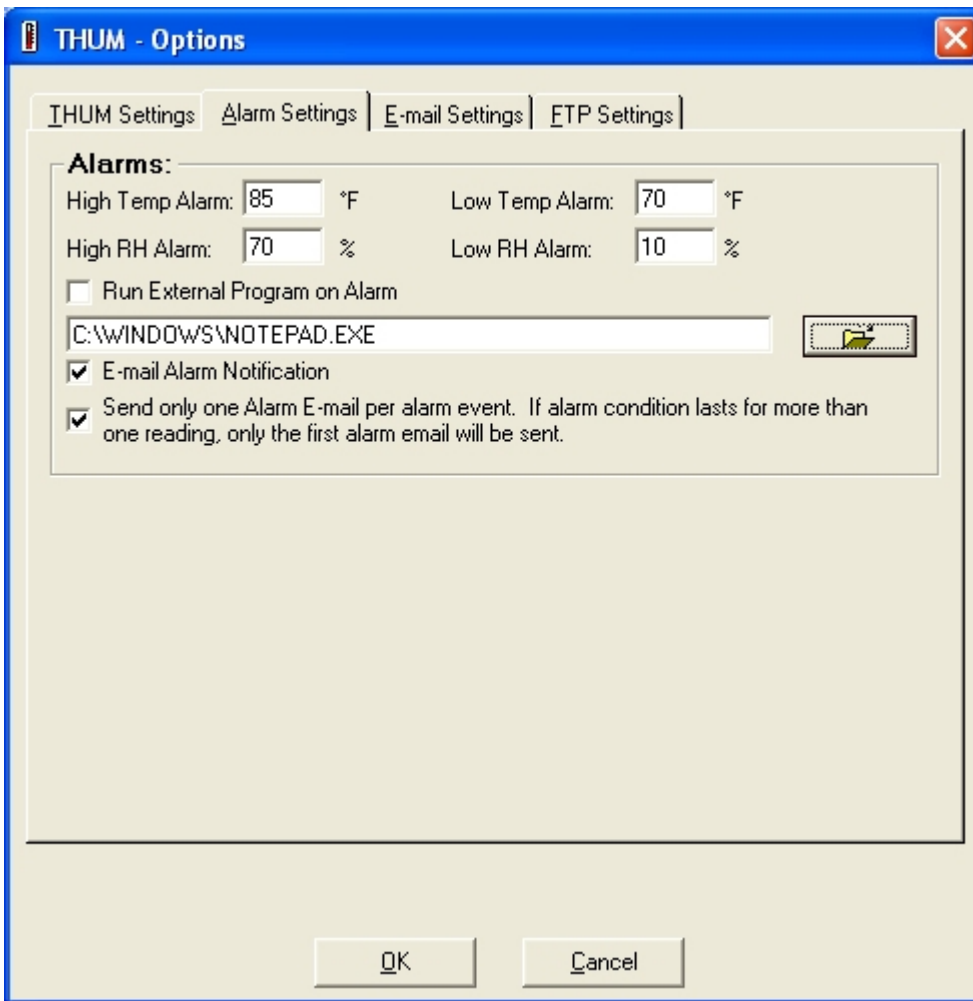Any value between 0 and 90%

Temperature Offset

If you require the THUM's temperature readings to match another device, you can enter a value in this box to offset the THUM reading to match the secondary device. If the THUM is sent to a calibration lab, this is were any offset the lab stated would be entered to correct the reading.

RH Offset

If you require the THUM's RH readings to match another device, you can enter a value in this box to offset the THUM reading to match the secondary device. If the THUM is sent to a calibration lab, this is were any offset the lab stated would be entered to correct the reading.

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.

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.

Send only one Alarm E-mail per alarm event
If this box is unchecked, the alarm email notification will be sent on every over limit reading.
If this box is checked and an alarm occurs a single alarm email notification is sent. Use this option in order to prevent numerous emails being sent for the same alarm condition.

E-mail Settings

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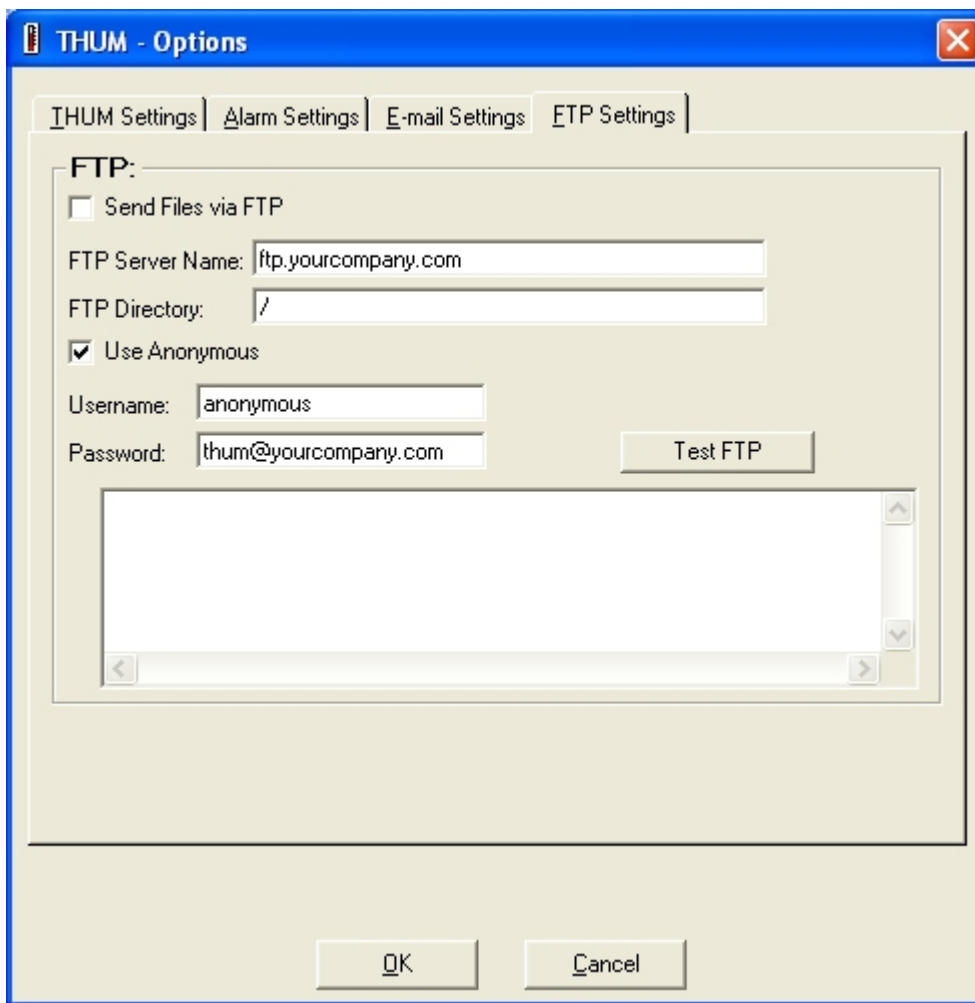
Use Authentication
If the mail server listed above requires Authentication, check this box and enter the username and password required.

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

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.
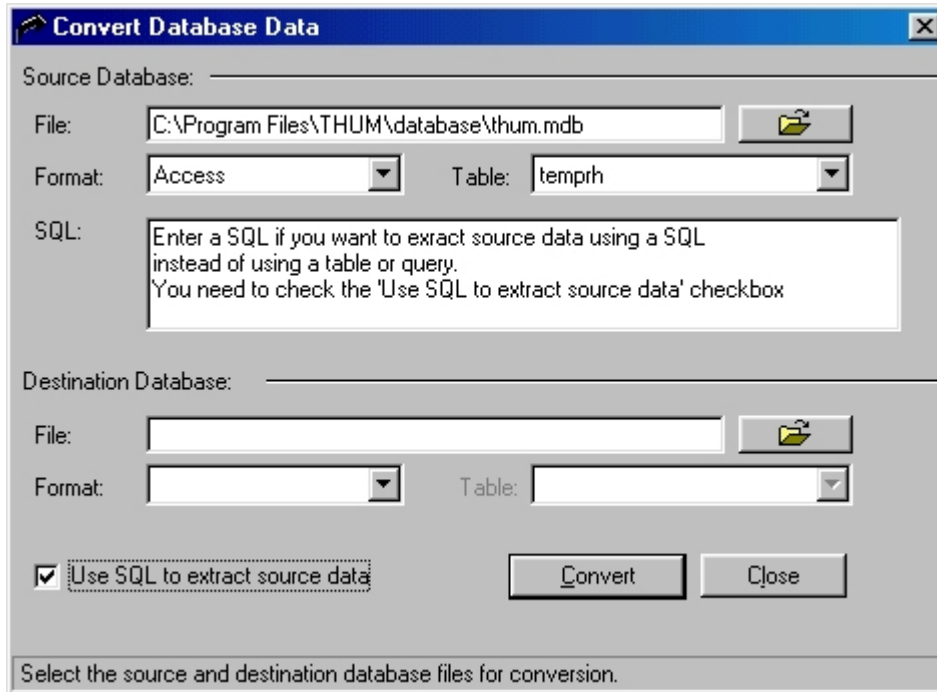
Test FTP
Once you have all of the FTP settings entered, you can click this button to send the files via FTP.
Note: You must already have a full time network connection available to connect to your FTP server. The THUM will not automatically connect dialup Internet connections.

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.

Note: When converting to an Excel spreadsheet, be sure to enter a name for the Excel sheet into the **Table** box.

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 were 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

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

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://webserver.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

Full 1 year 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 1 year from the date of purchase of your THUM

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

How To Get Service: Contact Practical Design Group, LLC www.practicaldesign.com support@practicaldesign.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. THIS DEVICE IS NOT TO BE USED IN ANY APPLICATION WERE THE USE, MISUSE, OR FAILURE OF THIS DEVICE COULD CAUSE HARM TO PEOPLE. THE FOREGOING WARRANTIES ARE IN LIEU OF AND PRACTICAL DESIGN GROUP, LLC 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 DESIGN GROUP, LLC (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 DESIGN GROUP, LLC HAS BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES. PRACTICAL DESIGN GROUP, LLC 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 DESIGN GROUP, LLC FOR THE THUM, OR COMPONENT THEREOF, RESPONSIBLE FOR SUCH DAMAGES.