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RS232 Download using HyperTerminal™

General Discussion

HyperTerminal is a data communications utility program that has been distributed with many Microsoft Windows® operating systems, including Windows 95, Windows 98, Windows Me, Windows 2000, and Windows XP. The version of HyperTerminal supplied with Windows is authorized for personal use only, but HyperTerminal Private Edition for business use may be purchased online at www.hilgraeve.com/hpte/order.html. The Private Edition comes with unlimited phone support for 60 days from date of purchase and unlimited, free email and web support. A HyperTerminal users discussion group is also hosted at the website.

HyperTerminal Private Edition allows a user to download readings stored in memory on an ADM-870C or ADM-860C AirData Multimeter into a HyperTerminal window and save the data as a HyperTerminal file.

The data may be printed in text format from the HyperTerminal window or may be copied in text format from the HyperTerminal window into a word processing program. The data may also be copied into a Microsoft Excel™ spreadsheet, and converted to numerical format using macros supplied on the 3.5" floppy disk. The data can then be manipulated to obtain totals, averages, standard deviations, etc.

HyperTerminal Private Edition and WinWedge® are both valid options for importing data from the ADM-870C and ADM-860C AirData Multimeters. HyperTerminal Private Edition is \$29.95 and requires the purchase of a serial communications cable (CB-Serial1) for \$50.00 from Shortridge Instruments, Inc. The price for WinWedge is \$295.00 and includes the serial cable.

Advantages of WinWedge

WinWedge has several features that are not available in HyperTerminal. WinWedge downloads the data directly into the spreadsheet or word processing application. HyperTerminal requires extra steps.

WinWedge offers flexibility in configuring the output format to automatically generate the specific data format required for extensive reports.

WinWedge allows the user to control the download of individual readings from the meter using hot keys on the computer keyboard. The WinWedge software can also be programmed to initiate automatic repeat readings in a continuous series or at specified intervals ranging from a few seconds up to 27 hours.

Using HyperTerminal

The operation of the HyperTerminal communications utility program may vary somewhat between operating systems and between computers. This procedure will work with most systems. See section **Additional Setup May Be Required**, if problems are encountered.

Store a series of readings with an ADM-870C or ADM-860C AirData Multimeter. Connect the serial cable barrel connector to the RS232 jack on the right side of the meter. The red dot on the connector aligns with the red rectangle on the lower part of the jack. Connect the DB9 connector

to a computer port, either COM1 (preferable) or COM2. If COM1 is not available on the computer being used, COM2 must be selected.

Turn the computer on. Select *Start > Programs > Accessories > Communications > HyperTerminal*. (Windows 95/98 may show *Hypertrm.exe*).

A large window will appear, titled *New Connection - HyperTerminal*. A small window is titled *Connection Description* and displays *New Connection*. Select any appropriate name for the new connection file and any icon. File name can be descriptive, such as Test, Flow1, TAB2, or ROOM3. Select OK.

The HyperTerminal working window will now display the file name in the title bar, followed by HyperTerminal. A small window will appear requesting area code, phone number, etc. Skip all entry fields except *Connect using*. Select either "COM1" (or COM2) or "direct to COM1" (or "direct to COM2"). Select OK.

A small window will appear titled *COM1 Properties* with a tab for *Port Settings*. Select the following port settings.

Bits per second:	9600
Data bits	8
Parity	None
Stop bits	1
Flow control	None

Select OK.

This blank file setup can be saved as a template and saved under a new name each time it is accessed. The saved file will retain the port setup parameters and eliminate the need for reentering the *COM1 Properties > Port Settings* for each new file generated. It is important to save the blank template file under a new name **before** loading any data into the file. Once data has been loaded into a HyperTerminal file, it can not be deleted.

The HyperTerminal working window will now be ready to display the data received through the communications port.

Press the STORE key on the meter keypad to display the average, sum, minimum or maximum reading in the stored reading sequence, then press the MODE key once. "PRINT MEM?" will be displayed. Press the READ key. The readings in memory will be downloaded into the HyperTerminal window. The readings will remain stored in the meter memory until the memory is cleared by pressing the SHIFT key, followed by the CLEAR key.

Select *File > Print* on the HyperTerminal window to print the downloaded readings. The meter outputs three columns: reading sequence number, measurement value, and units. An example of readings printed from memory is shown below:

```
VEL GRID
LOCAL DENS
STD 70° F
01    1576  FP
02    1581  FP
03    1578  FP
```

Select *File > Save As* to save the downloaded readings to a file which can be imported into Excel or another spreadsheet application.

Highlight specific cells, then select *Edit > Copy* to copy and then paste the highlighted readings into a word processing program. Select *Edit > Select All*, followed by *Edit > Copy* to copy all information in the HyperTerminal window.

Select *File > Exit* to terminate the session.

Additional Setup May Be Required

If the meter data fails to download properly, check all of the following settings.

Select *File > Properties > Settings* and confirm the following settings:

Function, Arrow, and CTRL keys act as:	select Terminal Keys
Backspace key sends:	select CTRL+H
Emulation:	select Auto detect
Telnet terminal ID:	select ANSI
Back scroll buffer lines:	set to 500

Select *File > Properties > Settings > ASCII Setup* and select as follows:

ASCII sending	
Send line ends with line feeds:	no check
Echo typed characters locally:	no check
Line delay:	zero milliseconds
Character delay:	zero milliseconds
ASCII Receiving	
Append line feeds to incoming line ends:	no check
Force incoming data to 7-bit ASCII	no check
Wrap lines that exceed terminal width:	check

Select *File > Properties > Settings > Advanced Window Settings* (not available on all systems) and select as follows:

Use FIFO buffers:	check
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The order in which the setup windows are displayed and their appearance may differ from the general description. Some operating systems require that information on the location and area code be entered prior to selecting COM1 (or COM2). This information is not relevant, but must be entered to continue.

Some systems do not display the *New Connection - HyperTerminal* window when HyperTerminal is first loaded. The icons for existing saved files will be displayed instead. Select an existing file, then select *File > New Connection*. A popup window will appear, asking if you want to disconnect. Select YES and the *New Connection* window will be displayed.

Pasting Readings Into a Word Processing Program

Open a word processing document. Select *Edit > Paste* from within the document. The data copied from HyperTerminal onto the clipboard will be pasted into the document. Manipulate the text as necessary to create a report. See the following example.

```
VELGRID
UNITS - FP
LOCAL DENS
STD 70BF
01R 1314
02R 1092
```

Importing Readings into Excel

Readings may be copied and pasted directly into a spreadsheet application. This data is copied in

a text format and can not be manipulated using the spreadsheet functions. There are several methods for importing data into Excel and retaining the original numerical attributes of the data.

Importing Readings into Excel using the predefined Excel spreadsheet HYP_TEST_1.XLS

The data may be converted to a numerical format using the predefined spreadsheet **HYP_TEST_1.XLS**. This spreadsheet is supplied on the 3.5" floppy disk that is included with either the ADM-870C or ADM-860C AirData Multimeter. The spreadsheet contains a macro for automatically converting text downloaded from the AirData Multimeter into HyperTerminal into numerical format.

Download the data from the meter into HyperTerminal as described under Using HyperTerminal. Open the spreadsheet file named **HYP_TEST_1.XLS** on the floppy disk. This spreadsheet file contains several examples of copied data.

Highlight specific cells in the HyperTerminal window, then select *Edit > Copy* to copy the highlighted readings. Select *Edit > Paste* from within the spreadsheet to paste the readings into the Excel spreadsheet. See the following example.

```
VELGRID
UNITS - FP
LOCAL DENS
STD 70&F
01R 1314
02R 1092
```

Press CTRL + H at the same time. The macro will strip the text attributes from the data. Each reading will be converted to a numerical entry that can be readily manipulated using the spreadsheet functions. See the following example.

```
VELGRID
UNITS
LOCAL DENS
70
1314
1092
```

All previous data may be deleted from the **HYP_TEST_1.XLS** file and it may be saved as a template for future spreadsheets. The CTRL + H macro will be saved within the spreadsheet.

Converting Imported Readings in Excel using the Predefined Macro HYP_MACRO_1.BAS

Data in any Excel spreadsheet may be converted to a numerical format using the predefined macro **HYP_MACRO_1.BAS**. This macro file is supplied on the 3.5" floppy disk that is included with either the ADM-870C or ADM-860C AirData Multimeter and may be imported into any existing Excel spreadsheet

Download the data from the meter into HyperTerminal as described under Using HyperTerminal. Open or define the Excel spreadsheet. Select *Tools > Macro > Visual Basic Editor > File > Import File*. Click on a:\HYP_MACRO_1.BAS (the file may be located elsewhere if it has been saved). The macro will be imported into the existing spreadsheet.

Select *File > Close and Return to Microsoft Excel* to return to the spreadsheet.

Pressing CTRL + H at the same time will run the macro and strip the text attributes from any data copied from HyperTerminal into Excel, converting the data to numerical format.

The macro will be saved within the Excel spreadsheet when it is saved.

Importing Readings into Excel using the Excel Text Import Wizard

Open Excel. Select *File > Open*. Select *Files of type > All Files*. Select the file path where the HyperTerminal file was saved. Select *Open*. Excel will display a *Text Import Wizard* that works in three steps.

Step 1 of 3 - Define Original Data Type

For *Original Data Type*, select *Delimited*. A representation of the data to be imported will be displayed in a scrollable field at the bottom of the window. The line numbers for the data in the HyperTerminal file are displayed on the left side of this field. The HyperTerminal file contains extra lines of information at the top which are unrelated to the data. These lines will not be imported if *Start import at row:* is specified for a row below the unnecessary text. Select *Next*.

Step 2 of 3 - Define Delimiters

For *Delimiters*, select *Space*. Check the box for *Treat Consecutive Delimiters As One*. Vertical lines will be displayed in the scrollable field at the bottom of the window. These lines indicate where Excel recognized the space delimiters and will place the data into separate columns. Select *Next*.

Step 3 of 3 - Select the Data Format

The data to be imported is displayed in three columns in the scrollable field at the bottom of the window. The first column is the reading sequence number, the second column is the actual reading and the third column is the units for the reading. Select each column individually (that column will become shaded) and select how the data in that column is to be formatted when it is imported.

If the *General* format is selected for all three columns, the reading sequence number and the units will be downloaded as text and the readings will be downloaded as numbers. Note that the degrees symbol does not import correctly. See the following example.

	UNITS	VELGRID	
	-		FP
	LOCAL	DENS	
	STD	70	°
	01R		1314
	02R		1092
	03R		920
	04R		839

If *Do Not Import* (skip) is selected for columns one and three, and *General* is selected for column two, a single column of readings will be imported into the spreadsheet. See the following example.

28.3
28.3
28.3
28.3
28.3

Select *Finish*. The data will be imported into the Excel spreadsheet and may be manipulated directly or copied into another spreadsheet with a predefined report format.