



The Diabetic's Meter Utility

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Comments and suggestions are welcome.



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Purpose of The Diabetic's Meter Utility

The primary purpose of The Diabetic's Meter Utility (The DMU) is to provide diabetics with a simple way to view blood glucose results.

The DMU will download a meter's blood glucose results and create a formatted datalog. The datalog can be imported (from a saved ASCII file or the Clipboard) into a spreadsheet or word processing program. The utility will also format the meter's data to create graphs and statistics for possible analyses in blood glucose results and trends.

The DMU has the ability to store labels for all event numbers. The datalog will include a label for each blood glucose result that has been given an event number and a label for that event number. The DMU is also capable of changing meter modes and setting the meter clock.

Datalog (formatted)

The DMU makes the maintenance of blood glucose records easier. The datalog is displayed after downloading and formatting the data from the meter. The datalog can be altered [by adding a name, an account number, a diagnosis, etc.] and saved as an ASCII file. It can also be printed out, providing an additional long-term record for future evaluations. The statistical information provided after the meter's data have been formatted and displayed are:

Number of results

Mean [Average]

Range (Min. - Max.)

Standard deviation

Coefficient of variation

Bar Graph [Frequency Distribution]

The bar graph displays a frequency distribution of the entire set of blood glucose results from the datalog. The number of bars will vary depending on the number of results used. The height of each bar represents the frequency or number of blood glucose results that fall within its particular range. Results are equal to or greater than the low boundary of the range and less than the high boundary of the range.

Line Graph [Date VS. Result]

Each blood glucose reading is represented by a point where the date value (x-axis) coincides with the blood glucose result (y-axis). This graph displays horizontal lines which represent an estimated regression line and the minimum and maximum results.

Pie Graph [Wide Range Distribution]

All blood glucose results that are located in the datalog are sorted into one of four possible ranges. The ranges for this graph are always static and give an indication or trend of what ranges the blood glucose results occupy.

Scatter Graph [Date VS. Result]

Each blood glucose reading is represented by a dot which coincides with a particular date (x-axis) and result (y-axis). The graph also displays the mean [average] and standard deviation for the entire set of blood glucose results.

Window of Time

The Window of Time will allow an individual to choose and create a set of blood glucose readings. The Window of Time will display important statistics (Average, Set Size, Minimum, Maximum, Standard Deviation, and Coefficient of Variation) that were created from the set. Use shift or ctrl in combination with the mouse to choose [highlight] a set of blood glucose values. Holding the left mouse button down after highlighting a reading and dragging the mouse pointer up or down will also highlight a range of values.

❑ **Meter Clock**

The DMU has the ability to change or display the meter's clock setting. The meter's clock can be easily set by entering the wanted time or by setting it to match the computer's clock.

❑ **Meter Modes**

The blood glucose meter has various modes that use a particular style or format in displaying its data. A meter mode can be easily changed by selecting the wanted mode (located in the menu) and its particular style or format that you want.

❑ **Blood Monitoring Database** (not implemented)

❑ **Download Log**

The DMU will store the last ten dates when a meter's data were downloaded. The View Download Log command will display the last ten dates that have been stored. This will help remind you when to download blood glucose results.



Utility Commands...

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- Append Datalog To...
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- Print Datalog
- Save Graph As...
- Print Graph
- Exit

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- Copy
- Paste
- Delete
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- Datalog
- Bar Graph
- Line Graph
- Pie Graph
- Scatter Graph
- Window of Time

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- Download Meter Datalog
- Label Event Number (1-9)
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 - CODE [1-16]
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Setting Up & Troubleshooting

Meter Type Selected...

Ensure that the proper meter type has been selected. Select, in the menu, the appropriate meter type being used (see under "Settings" - "Meter Type").

Serial Port Selected...

The serial port, used for transmission of data from the blood glucose meter, must be RS-232 compatible. Check your computer's "User's Manual" to ensure that the serial port selected is RS-232 compatible.

Baud Rate Selected...

The blood glucose meter is set at the factory for a baud rate of 9600. If the meter's baud rate is less than 9600, then use The Diabetic's Meter Utility to change the baud rate back to the factory setting of 9600 baud. The "Options" contained in The Diabetic's Meter Utility will only link to a meter that has been set to 9600 baud. That is the meter's fastest and most efficient rate in communicating with the computer. If you want to change the meter's baud rate to less than 9600, then it will have to be manually changed.

Interface Cable Hook-Up...

You can obtain an interface cable by calling Lifescan's Technical Service Department at: 1(800)227-8862. The interface cable can be acquired for \$5 (U.S.) and 2 One Touch Strips' Proofs of Purchase. The interface cable must be connected to the computer and meter when the utility is in use. If you try using the utility while the meter is not hooked up properly, it will display a message stating that the meter is not responding.

Setting up the interface cable:

1. Connect the interface cable's 25-pin female connector to a serial port on your computer.

If your computer only has 9-pin serial ports or you wish to hook the interface cable to a 9-pin serial port, then use a 25-pin to 9-pin conversion cable (or 25-pin to 9-pin convertor). A conversion cable (or convertor) can be purchased at most computer stores, electronic supply houses, or office supply stores.

2. Connect the interface cable's stereo plug to the data port on your blood glucose meter.
3. Make sure that your meter is set to RS-232. The meter is factory set at the RS-232 Data Management mode. If the utility establishes a link with the meter, the proper Data Management mode and baud rate are being used. If you are uncertain about the setting of your meter's Data Management mode, then use the utility or follow directions from your blood glucose meter's "Owner's Booklet" to see the procedure for displaying the meter's Data Management mode. If necessary, refer to the "Owner's Booklet" for information on changing the Data Management mode to RS-232. If the meter is not set at the RS-232 Data Management mode, the utility cannot establish a link.

You can obtain an interface cable or an "Owner's Booklet" by calling Lifescan's Technical Service Department at:

- U.S.A. 1 (800) 227-8862 (24 hour service) or
- Canada 1 (800) 663-5521

Troubleshooting...

If there is a problem establishing a link with the meter, check the following:

1. Interface cable is connected properly to computer's serial port.

2. Interface cable's stereo plug is properly inserted into the blood glucose meter's "DATA" port [located on left side of meter].
3. Proper serial [COM] port is selected. Serial [COM] port chosen must be the same serial port that the interface cable is connected to. To choose a serial port, use the Set Computer Serial Port (COM Port) command. If you are uncertain about which serial port the interface cable is connected to, then refer to your computer's "User's Manual."
4. An option has been chosen from the menu and meter is turned on before continuing. The blood glucose meter must be on for a link to be established.
5. Meter is set at the RS-232 Data Management mode.
6. Meter's baud rate is set to 9600.
7. Proper meter type in menu is selected.

If the communications link with meter is continually being broken, check the following:

1. Is there a program running in the background that may be accessing the same serial port that the interface cable is connected to?
2. Is the blood glucose meter being turned off (manually or automatically) during the download of data?
3. Is the interface cable properly connected to the computer's serial port?
4. Is the interface cable's stereo plug properly inserted into the meter's "DATA" port?

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Glossary

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ASCII File

The Diabetic's Meter Utility saves a datalog in an ASCII file format. This file format is accepted by many spreadsheet, word processing, database, and file manipulating programs.

Baud Rate

Rate at which data is transferred from one computer (or device) to another computer (or device).

Beeper Status

Status of meter's beeper (or beep sound). Beeper can be turned on or off.

Blood Glucose
Sugar in the blood.

Clipboard

A temporary storage area in memory that is used for the transfer of information. Information can be cut or copied onto the Clipboard and then pasted to another document or application.

CODE

Short for strip lot calibration code. The meter's code number can range from 1 to 16 and must match the code number on the test strip package.

Coefficient of Variation

Useful statistic that shows the volatility of blood glucose values.

Datalog

A formatted log created after downloading all blood glucose results that are stored in the blood glucose meter. Downloading data does not erase data that are stored in the meter.

Data Management Mode

Blood glucose meter's data management mode must be set to RS-232 to enable meter to communicate with the computer.

Data Port

Port (on the side of meter) labeled "Data" which accepts male connector of interface cable. The data port allows for the transmission of the meter's data.

Date Display Format

Arrangement of the day, month, and year displayed by meter. Meter can be displayed in a month/day/year format or a day/month/year format.

Download

Process of transmitting data from the host computer (blood glucose meter) to your personal computer.

Download Log

A log containing the last ten dates when a meter's data were downloaded.

Event

A blood glucose result can be labeled with an event number (1-9). Decide what each event number will represent. This will allow you or a health care professional to analyze trends in your glucose readings. A blood glucose result can be labeled by pressing the C Button on your meter until the desired event number is shown. Press On/Off button on meter to store event.

Frequency Distribution

The frequency at which data items fall within their distinct class.

Glucose Units

Scientific units used by the meter when displaying blood glucose results. Glucose units can be displayed as mg/dL or mmol/L.

Interface Cable

A cable which connects the blood glucose meter to the computer. The male connector of cable inserts into meter's data port and the 25-pin female connector attaches to a serial port on your computer. If your computer only has 9-pin serial ports or you wish to hook the interface cable to a 9-pin serial port, then use a 25-pin to 9-pin conversion cable (or 25-pin to 9-pin convertor).

Language Prompts and Messages

Particular language used by meter to display its prompts and messages. Languages available are: English, Spanish, French, Italian, Dutch, Portuguese, Swedish, German, or symbolic.

Maximum

The largest value of a set of numbers.

Mean [Average]

The sum of all blood counts divided by the number of blood counts.

mg/dL

A unit of measurement (milligrams per deciliter), used in the United States, for the concentration of glucose in blood.

Minimum

The least value of a set of numbers.

mmol/L

A unit of measurement (millimoles per liter), used in Canada and other countries, for the concentration of glucose in blood .

Mode

A meter's particular style or format that is used in displaying data.

Number of Results

The number of blood glucose results (excluding checkstrip and control solution readings) that are stored in the meter and used for creating the datalog and calculating statistical information.

Blood Glucose Meter

A device which is used to measure the amount of glucose (sugar) in the blood.

Punctuation Symbol

Punctuation symbol used with the glucose units "mmol/L." Symbol can be displayed as a decimal point or a comma.

Range (Min. - Max.)

The range of a particular set of blood glucose results (Minimum result - Maximum result).

RS-232

A standard adopted for serial communication between computers and external equipment.

Serial Port

Type of interface in which bits of data to be transferred are sequentially transmitted one at a time. Serial ports used for data transfer from the blood glucose meter to the computer must be RS-232 compatible. Interface cable must be connected to a serial port. If your computer has 9-pin serial ports, then the interface cable may need a 25 to 9-pin converter.

Set Size

Number of values contained within the set.

Spreadsheet

An application which stores data and information in grid cell's, enabling easier manipulating and calculating.

Standard Deviation

Essentially 90% or more of the values lie within plus or minus three standard deviations from the mean [average]. A smaller standard deviation indicates that there is little dispersion and the results are tightly clustered around its mean [average].

Time Display Format

Format that the meter uses to display the time. Time display format can be displayed in AM/PM format or 24 hour (or military) time.

About...

This command displays a box containing copyright and version information.

Append Datalog To...

This command appends the formatted datalog (in the workspace) to the end of a chosen ASCII (text) file. It is useful for keeping a particular individual's blood glucose results in the same file, making it easier to import entire blood glucose histories into a spreadsheet or word processing program.

Bar Graph

This command displays the bar graph that is created after successfully downloading the meter's data. See "Purpose of..." for a description and the purpose of this graph.

Change Format To 24 Hour

This command will change the time display format to 24 hour. For example, 3:00 P.M. is equivalent to 15:00 hours in 24 hour (or military) time.

Change Format To AM/PM

This command will change the time display format to the standard AM/PM format.

Change Format To Day/Month/Year

This command will change the date display format to the day/month/year format. For example, 2/12/10 would read 2 December 2010.

Change Format To Month/Day/Year

This command will change the date display format to the month/day/year format. For example, 2/12/10 would read February 12, 2010.

Change Symbol To Comma

This command will change the punctuation symbol to a comma.

Change Symbol To Decimal

This command will change the punctuation symbol to a decimal.

Change Units To mg/dL

This command will change the blood glucose unit to mg/dL.

Change Units To mmol/L

This command will change the blood glucose unit to mmol/L.

Clear Meter Datalog !

This command will clear the meter's datalog. This process takes about three seconds to execute. A warning message will be shown to give you the option of exiting this process or continuing with it.

Clear Workspace

This command clears the workspace of the current datalog and graphs.

CODE [1-16]

This command will set the strip lot calibration code (CODE) on your meter. The meter's code number can range from 1 to 16 and must match the code number on the test strip package.

Contents

This command displays the contents of The Diabetic's Meter Utility help file.

Copy

This command copies the selected portion of the datalog to the Clipboard. The Copy command also allows you to copy a graph to the Clipboard.

Cut

This command copies the selected portion of the datalog to the Clipboard and clears it from the datalog.

Delete

This command deletes the selected portion of the datalog.

Display Baud Rate

This command displays the baud rate currently being used by the meter.

Display Computer Clock Setting

This command will display the computer's current date and time.

Display Current CODE

This command will display the current strip lot calibration "code" that the meter is set at.

Display Current Beeper Status

This command displays the meter's beeper status, which will be either on or off.

Display Current Date Display Format

This command displays the meter's date display format, which is either month/day/year or day/month/year.

Display Current Glucose Units

This command will display what glucose units your meter is currently using when displaying blood glucose results. The possible glucose units displayed by the meter are mg/dL and mmol/L.

Display Current Language

This command will display the current language that is being used by the meter to display the meter's language prompts and messages.

Display Current Punctuation Symbol

This command will display which punctuation symbol is currently being used by the meter in displaying its mmol/L glucose units.

Display Current Time Display Format

This command will display the meter's current time display format. It will be either AM/PM format or 24 hour (or military) time format.

Datalog

This command will display the formatted datalog after the meter's data have been successfully downloaded.

Display Meter Clock Setting

This command will display the meter's date and time.

Download Meter Datalog

This command will download the data from your meter. A formatted datalog containing statistical information, in addition to four graphs, will be created.

Exit

This command closes The Diabetic's Meter Utility.

Label Event Number (1-9)

This command shows an option panel which will allow you to give labels for selected events. Unchecked events will retain the same label as they had before this command was chosen. Make sure the event number is checked and labeled, to ensure that the label is saved for that particular event.

[Language]

Substitute English, Spanish, French, Italian, Dutch, Portuguese, Swedish, German, or Symbolic for [Language]. This command will change the display of the meter's prompts and messages to the selected language.

Line Graph

This command will display the line graph that is created after successfully downloading the meter's data. See "Purpose of..." for a description and the purpose of this graph.

Meter Type

This command will provide a list of meter types. The proper meter type must be chosen to ensure that the utility works properly.

Paste

This command places a copy of the Clipboard contents at the insertion point in the document.

Pie Graph

This command displays the three-dimensional pie graph that is created after the meter's data have been successfully downloaded. See "Purpose of..." for a description and the purpose of this graph.

Print Datalog

This command will print out the formatted datalog.

Print Graph

This command will print out the visible graph.

Save Datalog As...

This command saves the formatted datalog (in the workspace) to a newly created file. The file is saved in an ASCII (text) file format.

Save Graph As...

This command saves the visible graph (in the workspace) to a file, leaving a valuable reference for future evaluations. The graph is saved in a bitmap (.bmp) format and can be viewed using a graphics viewing program, such as the Paintbrush program.

Scatter Graph

This command displays the scatter graph that is created after successfully downloading the meter's data. See "Purpose of..." for a description and the purpose of this graph.

Search For Help On...

This command displays a box which enables you to search the help file for a particular subject.

Select All

This command will highlight the entire datalog. The entire datalog can then be cut or copied on to the Clipboard. A spreadsheet or word processing program can import and manipulate the data contained on the Clipboard.

Set Computer Serial [COM] Port

This command shows an option panel which will allow you to select a serial port that the interface cable is connected to. The serial ports available are COM1, COM2, COM3, or COM4.

Set Meter Clock

This command will allow you to set the meter's clock to a chosen date and time.

Set Meter Clock To Match Computer's

This command will set the meter's date and time to the computer's date and time.

Set To 9600 bps

This command will set your meter's baud rate to 9600 bps. This is the preferred baud rate to set your meter to.

Turn Beeper OFF

This command will turn the meter's beeper off.

Turn Beeper ON

This command will turn the meter's beeper on.

Undo

This command will undo the last operation executed on the formatted datalog.

View Download Log

This command will show a log which contains the last ten dates when a blood glucose meter's data were downloaded.

Window of Time

This command displays the Window of Time dialog that will allow an individual to choose and create a set of blood glucose values and display useful statistics obtained from that set. See "Purpose of..." for a detailed description and purpose of this dialog.

