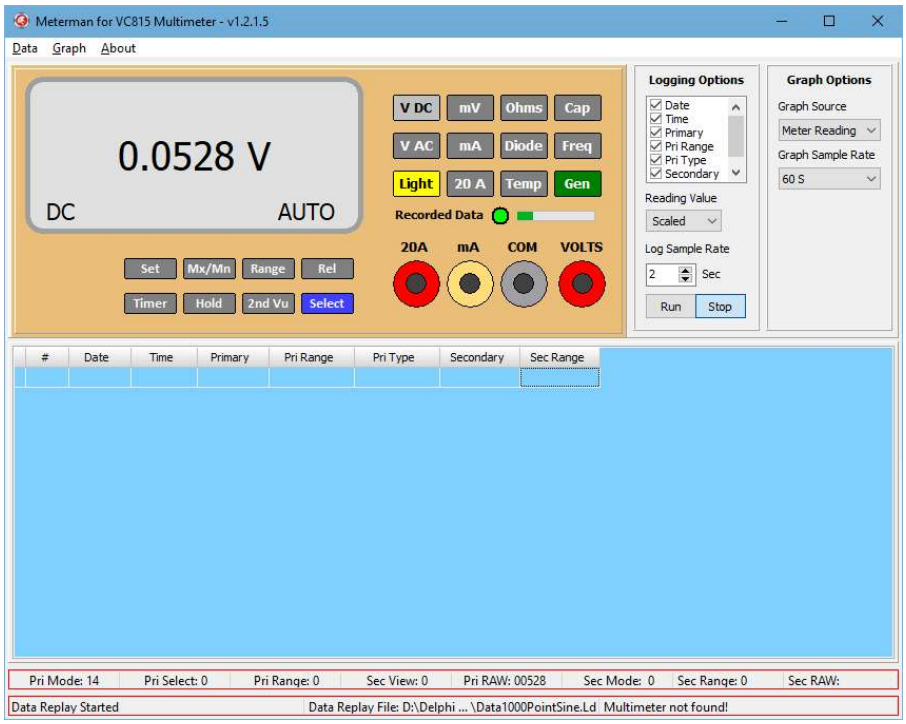
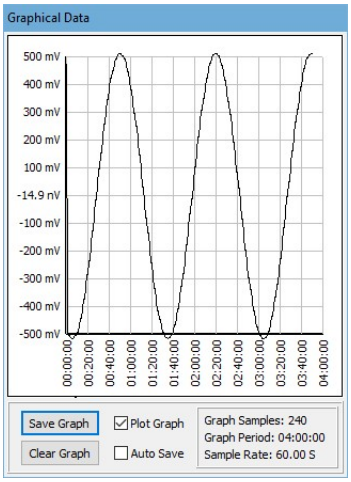
# Meterman VC8145

The Vc8145GUI application attempts to replicate, remotely on a Windows PC, all the available functions on the Vc8145. The application was developed on Windows 10 and should function satisfactorily on W7, W8.0, W8.1 and Windows 10.




## Features

### Meter

- The application does not require the COM port to be set, this is done automatically.
- Reads and displays ALL measurements available on the VC8145 DMM.
- Multimeter readings are always taken at 250mS intervals. If a graph display or logging period greater than 250mS is selected then the intermediate 250ms samples will be averaged. *i.e. if a graph sample period of 5S were selected then each displayed point would consist of 20 samples averaged.*
- The reading type buttons indicate the currently selected measurement.
- DMM Data can be captured to a file and later replayed. The status of the record and replay processes are shown. The replay process, once started, loops until stopped manually.

### Graph

- The graph can be turned on/off.
- Plot size is adjustable.
- The graph auto-ranges to optimise the resolution and provide best readability.
- The graph scrolls 25% to the left when it is completely filled, plotting then continues.
- The graph can be set to auto-save (as a Jpeg file) when full; once saved it is then cleared and plotting continues.
- The graph can be saved as a Jpeg file.
- The graph can plot either DMM readings or Logged readings.
- Nine different graph displayed points selections can be made.

# Meterman VC8145

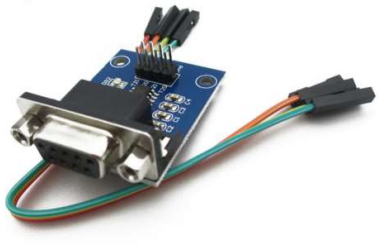
**Logging**

- Logging can be started and stopped at will.
- Logged data is saved as CSV file allowing it be imported into Excel.
- Primary and secondary displayed values can be logged along with the type of measurement, date and time. Any/all seven available fields can be logged.
- The primary and secondary measurements can be logged as Scaled, Scientific or absolute values.
- The logging sample period can be set to any value from 1S upwards.
- The logging process will auto-save at pre-settable sample counts

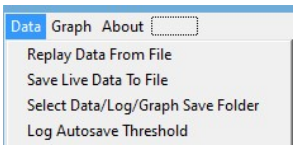
In addition to the GUI version of Meterman there is also a command line version. This has a number of different arguments to allow unattended data collection from the multimeter using a batch file or similar.

RS232

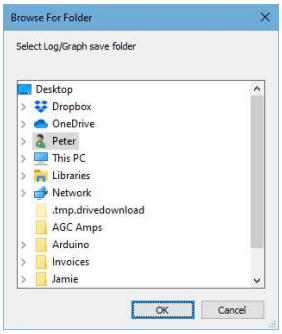
The RS232 implementation on the VC8154 is not complete, the result of this is that it may not work on all RS232 ports, USB connected or built in. The primary problem is that the transmit signal from the VC8145 swings only between 0v and 5v, it should swing between a minimum of -3 to +3v. The result is that when the VC8145 replies to a message it is not seen by the port or it is corrupted, this is dependent upon the manufacturer of the port. I have a few different USB->RS232 devices and the only one that works reliably is the Easysync USB-2COM-M, I would expect other Easysync converters to be ok. The best fix is, make/buy (from eBay or elsewhere) a small converter board, and fit it internally to the instrument so that RS232 is properly implemented.
WARNING - most of the RS232 chips will invert the transmit signal so you will need to invert between the instrument and the converter board.



**Instructions**

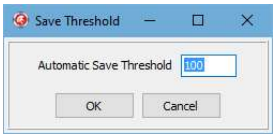



**Data menu** – This has four options, the last two are important for the correct operation of the application.

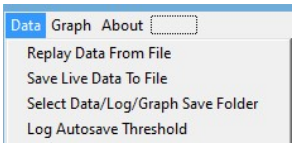



**Data/Log/Graph save folder** - Select Data/Log/Graph save folder. This allows you to select a folder in which to place/load files from.

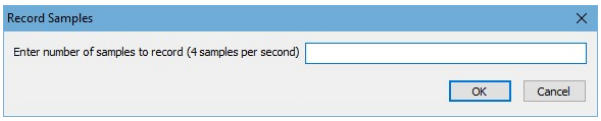
After installing the application it is suggested that make this setting first. Selecting this option will open a folder browse window, navigate to the folder in which you want to save/load your files from and press OK.



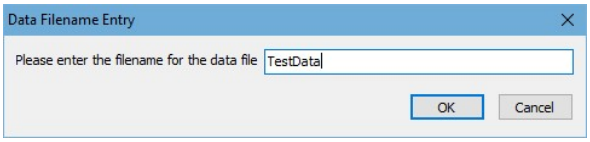

**Log Autosave Threshold** – This setting allows you to save the log after a certain number of values have been collected. When you select this menu option you will be offered a window which will allow you to enter the threshold number, enter the number (default 100) and press OK. The actual time between saves will depend upon the time between samples. If the sample period is set to 5S then a threshold of 100 will save the log every 500S.




**Record Live Data to File** – This option allows you to collect real-time data from the instrument and save it to a file. Select the option, a number of samples to be taken window will open. Enter the number of samples that you wish to collect (numbers only), the instrument delivers four samples per second so entering a value of 40 will save 10 seconds of data for measurement when the second display is inactive and 5 seconds when it is. Press OK.

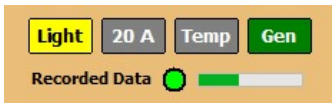



You will then be offered a window asking you to name the file into which the data will be saved. If the file already exists it will be overwritten without asking. The file will be saved into the folder set by the **Data/Log/Graph save folder** option. The state of the record process is displayed in area below the bottom row of measurement buttons. When in record the LED will be RED and the graph to the right of the LED will indicate the percentage of samples that have been saved so far.





**Replay data from File** – This option allows you to replay a file saved earlier. Select the Replay Data from File option, this will open a file browse dialog, select the data file (data files have the .Ld extension) and press Open. The file will now begin to replay, when the end is reached it will rewind to the start. The state of the replay process is displayed in area below the bottom row of measurement buttons. When in replay the LED will be green and the graph to the right of the LED will indicate the percentage of samples in the file that have been replayed so far.

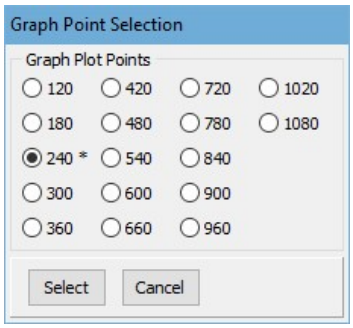



The record/replay menu options will be checked when they are active. To terminate either simply uncheck them in the menu.

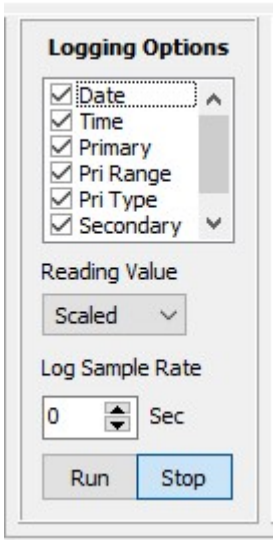
**Graph Menu**

- The first option controls the display of the graph. This is a check box, check the box to display the graph.

- The second option allows the selection of the number of points that may be plotted on the graph. The number of points available for selection are: 120, 180, 240, 300, 360, 420, 480, 540, 600, 660, 720, 780, 840, 900, 960, 1020 and 1080. Changing the number of points will cause the current graph to be cleared.



**Logging Options**



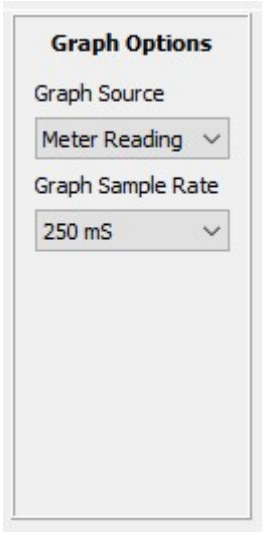

**Fields** - There are seven pieces of data that can be saved into the log, these are selected by checking the appropriate boxes in the list of fields to be collected. Any or all can be checked.

**Reading Value** – There are three options for this:

- Scaled – This will present the reading scaled i.e. 1000 Ω will be 1K, 1000000 Ω will be 1M.
- Scientific – This presents the reading in scientific form i.e. 1000 Ω will be 1E3, 1000000 Ω 1E6 and 100uF 1E-4.
- Absolute – This presents the value as read 1000 Ω is 1000, 1MΩ 100uF is 0.0001.

**Log Sample Rate** – This sets the sample rate. A value of 5 will set the sample rate to 5S etc. Setting a rate of zero will sample at the mimum period possible which is 250mS. As the application samples at 250mS any rate above zero will cause samples to be averaged. i.e. A rate of 1S will present the average of four samples, a rate of 5S will present an average of 20 samples.

**Graph Options**

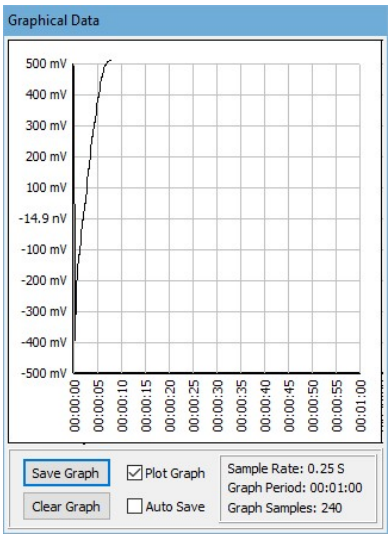



The graph has a maximum of 256 points, when this is exceeded the graph will scroll 64 points to the left and the horizontal scale will incremented by the appropriate value. The vertical scale is auto ranging, when the top or bottom scale points are exceeded the graph will be redrawn with appropriate values that will maximise vertical resolution. An over range value of 5% is allowed before the scale is recalculated.

**Graph Source** – This can be set to either meter reading or Log. The “Meter Reading” setting is the value of the main display of the instrument. The “Log” setting will plot a point on the graph whenever a Log sample is taken. The graph point will be the value that is saved into the log and therefore maybe averaged, dependent upon period.

**Graph Sample Rate** – This sample rate used when in the graph source is set to “Meter Reading”. The value can be set to: 250 mS, 500mS, 1S, 2S, 5S, 10S, 20S, 30S and 60S. Using combinations of settings for number of points on the graph and sample rate will allow the graph to span periods from 60 seconds to 18 hours.

**Graph Functions**




**Plot Graph Checkbox** – By default this is checked. When unchecked graph points will **not be plotted**.

**Clear Graph** – This will clear the graph plotted points, clear the scale settings and restore the next plot point to the start of the graph.

**Save Graph** – This saves the current graph display as a jpg file. The Filename will be

"Graph dd-mm-yyyy_hh-mm-ss_MD_SP_GP_Start_#.jpg

| | | |
|---|---|---|
| Where | dd | 2 digit day |
| | mm | 2 digit month |
| | yyyy | 4 digit year |
| | hh | 2 digit hours |
| | mm | 2 digit minute |
| | ss | 2 digit second |
| | MD | A = Auto Save M = Manual Save |
| | SP | Sample Period in milliseconds or Seconds |
| | GP | Number of graph points |
| | # | Relative starting time of the first point on the graph in hh:mm:ss format |

**Auto Save** – When checked the graph will automatically be saved as a .jpg file as soon as it has the selected number of points plotted. The filename will be the same as for Save Graph. When the graph has been saved the plotted points and the scale settings will be cleared and the horizontal start time of the graph set appropriately.

On the directory listing below the first plot was as follows:

Captured on 20th October 2019
The final point was captured at 08:09:07
The graph was captured automatically
The period between graph points was 60 S
The graph has 240 points.
The relative graph starting time was 12:00:00

| Name | Date modified | Type | Size |
|---|---|---|---|
| Graph 20-10-2019_08-09-07_A_60S_240_Start_12-00-00.Jpg | 20/10/19 08:09 | JPEG image | 60 KB |
| Graph 20-10-2019_08-07-37_A_60S_240_Start_08-00-00.Jpg | 20/10/19 08:07 | JPEG image | 60 KB |
| Graph 20-10-2019_08-06-07_A_60S_240_Start_04-00-00.Jpg | 20/10/19 08:06 | JPEG image | 60 KB |
| Graph 20-10-2019_08-04-37_A_60S_240_Start_00-00-00.Jpg | 20/10/19 08:04 | JPEG image | 60 KB |

The graph image, as shown above, also includes information about sample period, total graph period, auto save, number of points on the graph and relative time.

**Approximate** graph image (jpeg) sizes:

| Points | Bytes |
|---|---|
| 120 | 32KB |
| 180 | 38KB |
| 240 | 50KB |
| 300 | 60KB |
| 360 | 67KB |
| 420 | 75KB |
| 480 | 82KB |
| 540 | 90KB |
| 600 | 97KB |
| 660 | 105KB |
| 720 | 112KB |
| 780 | 119KB |
| 840 | 127KB |
| 900 | 134KB |
| 960 | 141KB |
| 1020 | 149KB |
| 1080 | 156KB |