QtDMM Quickstart

a Digital Multimeter application written by

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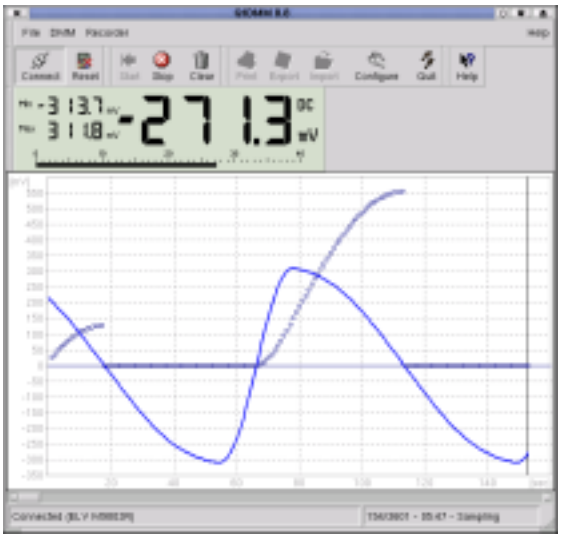
Introduction

The purpose of QtDMM is to connect a Digital Multimeter (DMM) via serial line (or USB) to a computer. It can read the measured data from the multimeter and plot a graph or export the data into a ASCII file. It was was initially developed for a Metex ME-32 multimeter, but later several more multimeter have been added. The following devices are directly supported at the moment:

Device	Protocoll
Digitech QM1350	*14 bytes ASCII, polling*
ELV M9803R	*11 bytes binary, continuous*
MASTECH M9803R	*11 bytes binary, continuous*
McVoice M-980T	*11 bytes binary, continuous*
Metex M-3660D	*14 bytes ASCII, polling*
Metex M-3830D	*14 bytes ASCII, polling*
Metex M-3850D	*14 bytes ASCII, polling*
Metex M-3850M	*14 bytes ASCII, polling*
Metex ME-11	*14 bytes ASCII, polling*
Metex ME-22	*14 bytes ASCII, polling*
Metex ME-32	*14 bytes ASCII, polling*
Metex ME-42	*14 bytes ASCII, polling*
Metex universal system 9160	*14 bytes ASCII, polling*
PeakTech-4010	*14 bytes ASCII, polling*
PeakTech-4390	*14 bytes ASCII, polling*
PeakTech-451	*10 bytes ASCII, continuous*
Radioshack 22-805 DMM	*14 bytes ASCII, polling*
Radioshack RS22-168A	*14 bytes ASCII, polling*
Voltcraft M-3650D	*14 bytes ASCII, polling*
Voltcraft M-4660	*14 bytes ASCII, polling*
Voltcraft ME-11	*14 bytes ASCII, polling*
Voltcraft ME-22T	*14 bytes ASCII, polling*
Voltcraft ME-32	*14 bytes ASCII, polling*
Voltcraft VC 670	*14 bytes ASCII, continuous*
Voltcraft VC 820	*14 bytes binary, continuous*
Voltcraft VC 840	*14 bytes binary, continuous*

QtDMM's philosophy is to be as simple as possible (It is available for more than four years now and I had not many complains about missing documentation - So it seems to be simple to use :), but still configurable for your needs.

After starting QtDMM you'll see it's main window. On top it shows the standard menu- and toolbar. Then the multimeter display and the graph. The status bar at the bottom gives you some hints about the data acquisition status.



QtDMM main window

The first step would be to configure your multimeter. To do so just click the configure button in the toolbar (or call **DMM/Configure** from the menu bar). The following dialog shows up:

Multimeter configuration

If you are lucky your multimeter is listed in the multimeter menu on top of the dialog. If not try to find settings that work with your device. If you found working settings for a new model, save them into a file (Save button) and send them to me (*qtdmm@mtoussaint.de*).

To find out if QtDMM works with your multimeter adjust the settings, click **Apply** and connect to the multimeter by clicking in the toolbar. If the display shows the same value as your multimeter, you are done.

The Display

The multimeter display

The display shows the current value from your multimeter. Additionally it has a min/max memory and a bar graph. The min/max memory can be reset by clicking in the toolbar or by selecting **DMM/Reset** from the menu bar. The appearance of the display can be configured by calling **File/Configure** from the menu bar. The display configuration can be found on top of the dialog.

GUI configuration

In this dialog visibility and appearance of the DMM display can be configured. It also configures program behavior on exit and toolbar visibility. If you clicked away the 'tip of the day' dialog it can be reactivated here too (QtDMM's tips of the day still lack some text - anyone wants to help? If you have tips you want to add, just send me the text. I can can easily integrate that into the sources).

The Recorder

The next important thing would be the recorder. You probably installed QtDMM to record your measurements into a file. If the multimeter is connected just click in the toolbar or select **Recorder/Start** from the menu bar. The recorder can be configured by selecting **Recorder/Configure** from the menu bar.

Recorder configuration

Here you configure how and when to acquire data from the multimeter. The 'Sample every' entry configures the interval at which data is inserted into the graph. 'Sample time' configures the maximum sampling time (You can always stop sampling by clicking in the menu bar or by selection **Recorder/Stop** from the menu bar).

Recording can be started manually, at a given time or triggered by the measured value itself. This can be configured in the 'Start' section of the dialog.

Hint: *The threshold values can be entered with a 'scientific suffix' like 10.2m of 42.0k*

Hint: *If you set 'Sample time' to zero the field will show 'infinite'. This means QtDMM will not stop the recording automatically. The amount of recorded data is still restricted to the graph size (QtDMM stores the recorded data in memory. It can't store a infinite number of values)*

Hint: *The threshold for the trigger can also be set with the mouse. Just click and drag the horizontal line with the mouse.*

The pretrigger is not implemented yet

Scale configuration

In the scale configuration dialog you can configure the behavior of the vertical scale (either automatic scaling or manual settings and the horizontal size (time) of the graph.

Scale configuration

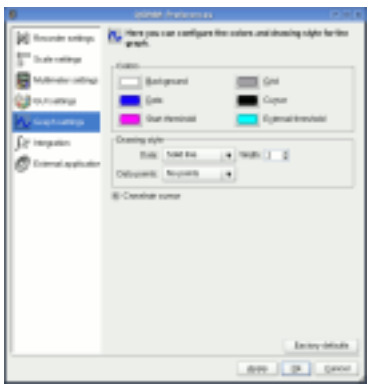
'Window - Size' means the size of the visible portion of the graph.

Hint: *You can also use your 'mousewheel' to zoom in and out*

'Window - Max. length' is the maximum amount (in time) of data that will be recorded. Even if you have a longer 'Sample time' in the recorder settings. If the 'Sample time' is longer the graph will show a gliding window with the configured maximum length. Older values will be discarded.

Graph settings

Finally we want to configure the appearance of the graph.

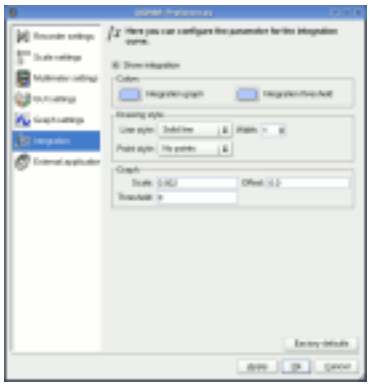


Graph configuration

Not much to say here. Should be self explanatory.

Integration

Additionally QtDMM can show an integration of the recorded data. This might be helpful to find small changes in value.



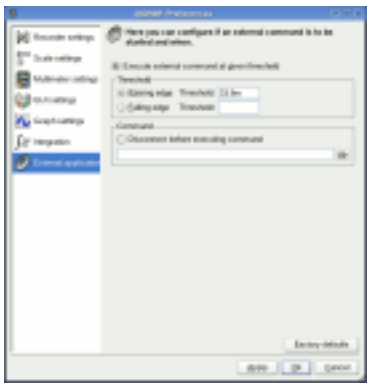
Integration feature

The integrated curve can be scaled (And usually has to) and can have an offset. The threshold parameter defines when the integration curve is to be reset to zero (Useful if you have slightly oscillating values).

Hint: *The threshold for the integration can also be set with the mouse. Just click and drag the horizontal line.*

External application

Finally QtDMM can start an external application if given thresholds are reached.



Start external application

The application can be started at a raising or falling edge of the measured data. If necessary QtDMM can disconnect the multimeter (releasing the serial port) before starting the application.

Hint: *The threshold for the external application can also be changed with the mouse. Just click and drag the line.*