

# DMM for dScope III BETA Documentation

## Overview

DMM stands for Digital Multi-Meter. DMM for dScope is a software emulation of a DMM that uses the Prism Sound dScope III hardware. It is a little different from a normal DMM in a number of ways. Firstly, it is an audio specific meter. Where a normal DMM might measure Volts, Ohms, Current, capacitance etc, this one measures Amplitude, Balance, Cross-talk, Noise and THD+N. A normal DMM usually can only measure analogue parameters, but this one also measures digital connections.



## What it is and what it's not

DMM for dScope is not part of dScope. It is a separate program, however, it relies on dScope being present and running. It acts as both a remote control for dScope and a display for some dScope parameters. When you press a button on the DMM interface, it controls dScope functions. When you make a change in dScope that affects a parameter of the DMM, the DMM display follows. For those who are familiar with the functioning of dScope, it can be thought of as a skin or front end for the dScope Continuous Time Analyzer (CTA). The display area shows the current settings of the CTA and the buttons change these settings.

## How it works

You don't need to read this to be able to use DMM for dScope, but it will probably help you to understand why it behaves the way it does. DMM for dScope is a stand-alone program written in Visual Basic that uses the Active-X controls of the dScope software to get information from dScope and to control it. It updates its display periodically by asking the dScope what it is displaying. When a button is pressed, it sends the command to the dScope immediately. This command sets off a chain of events which can cause complex changes to be made to the settings of the dScope hardware and software. When dScope has made these changes, it updates its status and then the DMM can read the changed status back and display it. Most changes take place almost instantly, but some changes, such as those to the function of the device can take a second or so to appear. The functions on the DMM correspond to functions on the dScope CTA. These functions are effectively presets of the CTA settings. The dScope CTA is capable of using more functions than the DMM interface allows, and more can be programmed. For this reason the DMM has a position on its function knob called "other". This indicates that a function has been selected on the dScope that is not supported by the DMM. "Other" cannot be selected from the DMM interface. There are also several parameters of the CTA which cannot be controlled from the DMM. These are mainly related to the setting of the filters. The CTA can use high and low pass filters as well as a range of options on band-pass or band-reject filters.

## Installation

DMM for dScope consists of a single executable file "dScope DMM.exe". This can be run from anywhere on your PC. The only requirement is that the Visual Basic Runtime environment be installed. This is often included on many new PCs or can be downloaded for free from the Microsoft web site. In addition, one specific font is used for the display digits. The meter will function without this font, but will not look so good. In order for it to appear as it does in this documentation, you will need to install the font LCD2.TTF before running the program.

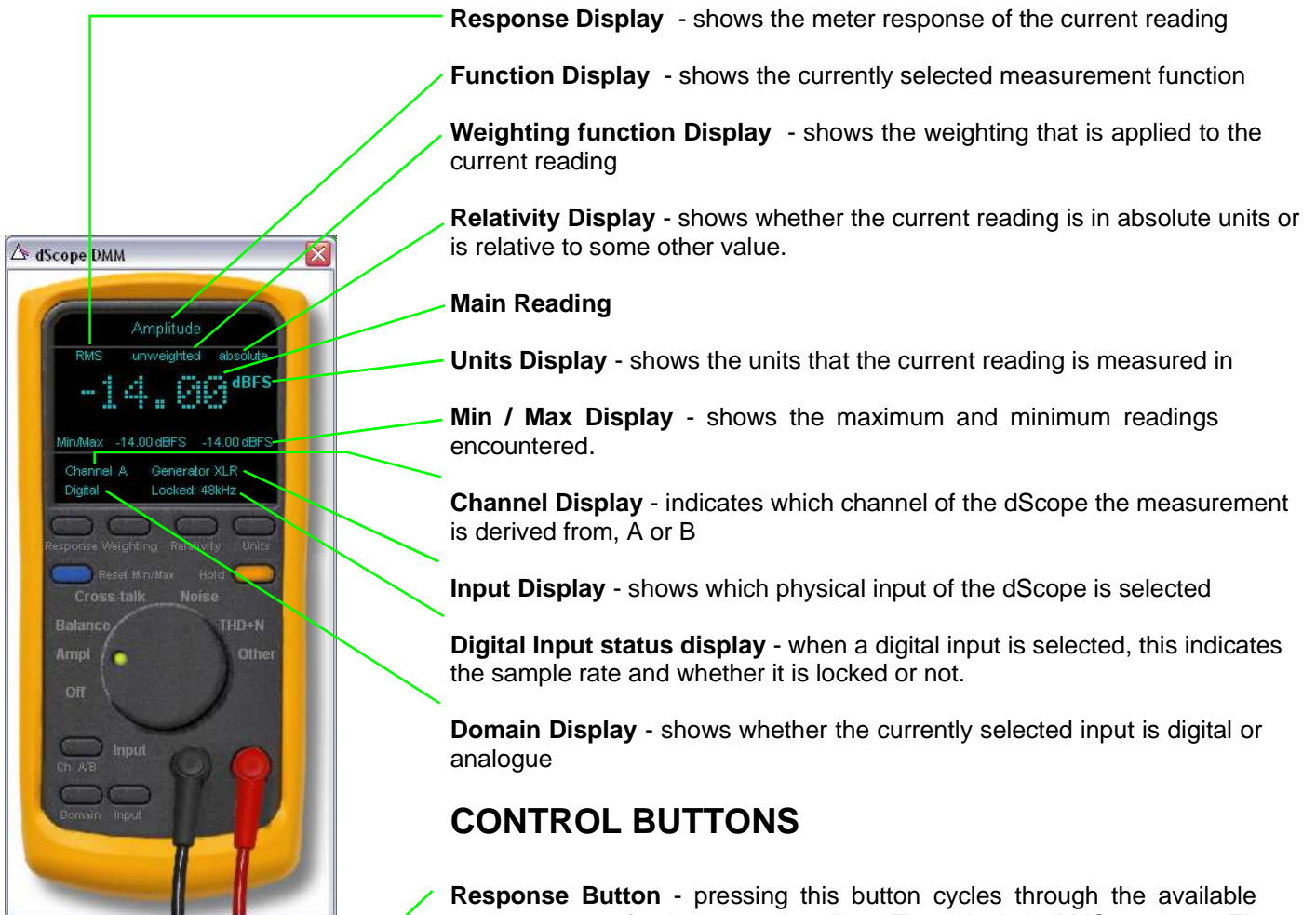
## Un-installation

To un-install this program, simply remove the executable file "dScope DMM.exe" - the program makes no changes to your computer registry or settings. You can also un-install the font LCD2.TTF if desired.

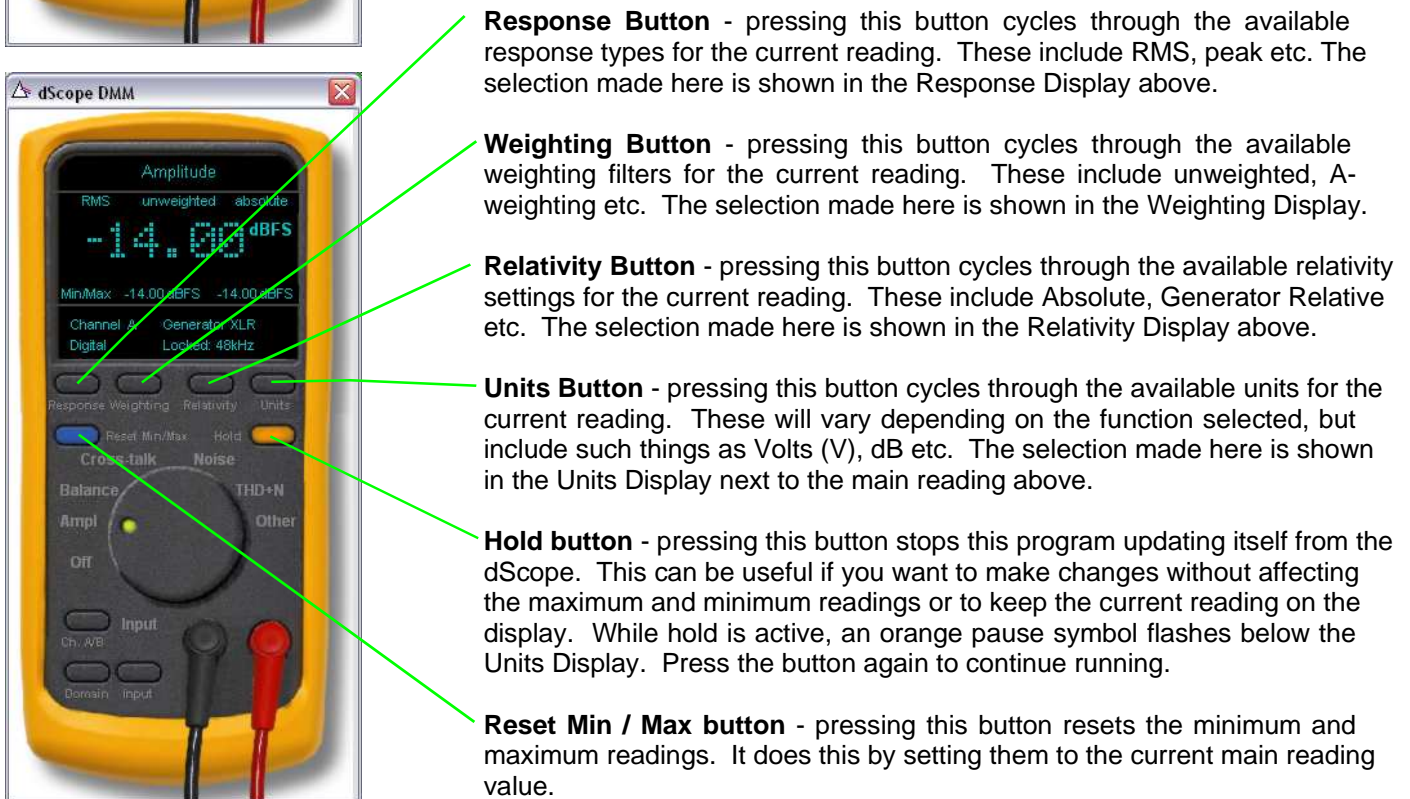
## Operation

To run the program, just run the executable "dScope DMM.exe" by double clicking on it. You can also make a shortcut to it on your desktop or task bar and run it in this way. The program itself is very simple. It has no menu or tool bar, and only has the graphic of the meter with its display and buttons. The functionality of these are described on the pages that follow

## DISPLAY AREA



## CONTROL BUTTONS



## FUNCTION KNOB



**Function Knob** - This is used to select between the five available functions. Note that the “Off” position and “Other” position are not available from this knob. To turn the knob clockwise, click with the right mouse button, to turn it anti-clockwise, click with the left mouse button.

Functions can also be selected by clicking on the name of the function. There are two exceptions to this: One is “Other” which is described below. The other is the “Off” position. Clicking on the “Off” label will end the program.

**Other Position** - since the dScope CTA is capable of more functions than can be implemented on an interface such as this, (and is even able to have custom functions programmed) , whenever a function that is not part of this interface is selected by the dScope, the knob will show this by pointing to the “Other” position. The “Other” position cannot be selected by the user from this interface.

## INPUT SELECTION

**Channel A/B Button** - this interface is single channel. dScope is a two channel device and this button is provided to select between the two dScope input channels A and B. The selection made here is displayed in the Channel Display above

**Input Button** - this cycles through the available input sources of the current input domain. The selection made here is displayed in the Input Display above.

**Domain Button** - this toggles between selecting the dScope Digital and Analogue inputs. The selection made here is displayed in the Domain Display above.

## Notes

**Minimum and Maximum Readings:** these are not the same as the minimum and maximum readings that are available in the dScope “reading” windows. These simply keep track of the minimum and maximum readings that are encountered by the DMM program. Because the update rate of the DMM is lower than the update rate of the dScope itself, not every reading that the dScope takes will be registered by the DMM. This means that the DMM may miss rapid transients or individual peaks. If you need to know the peak value reliably, you will need to use the dScope interface.

**Filter settings** - dScope's CTA has settings for band-pass / band-reject, low-pass and high-pass filters. These are not controllable by or visible in the DMM interface. They should be checked in the dScope if they are likely to have an impact on the measurement taken.

**Function selection** - When a function is selected on the dScope Continuous-Time Detector , it runs a script that fills in the rest of the fields on the Detector. However, these fields can then be changed and so the resulting setup may be nothing like the function that is specified. Within the dScope options menu, you have the option to set the dScope to keep the original function settings so that when a function is selected it always brings up the original “preset”, or you can have it so that it keeps the changes you make and attributes them to the current function for the duration of the session. In the latter case, the next time you selected the function, it would bring up the original settings plus the changes you had made to it. You could then change units, bandwidth etc and not have to keep re-setting them when changing between functions. This will also affect the functioning of the DMM. If you want the meter to always bring up the same parameters when a function is selected, disable the option “Remember changes to detector functions for this session” which is found in Utilities > Options > Miscellaneous.

**Settling Settings** - in order for the DMM interface to run smoothly and fast, it turns off the “Use settling details when getting result values from scripts” option in the Utilities > Options > Miscellaneous dialogue. It puts it back how it found it when exiting. An exception to this would be if the dScope exited first, in which case the DMM program would not be able to change it back before closing.

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