

4000 ZC Multimeter Data Logger – Multi Version

Rev 1.0

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Introduction

The 4000ZC Multimeter Data Logger acquires data from up to three Digitek DT4000ZC or TekPower TP4000ZC multimeters simultaneously. The data can be viewed in a table, plotted in graphs, or saved to a file. Data from multiple meters can also be combined arithmetically and displayed and saved in the same ways. This software is completely functional as installed but it can also be used as the starting point for developing custom data logging software to address your specific requirements. Contact Intelligently Designed Systems for any installation or operation problems or to discuss customizing and expanding the program to meet your needs.

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Installation instructions

Requirements

- Digitek DT4000ZC or TekPower TP4000ZC Multimeter
- Multimeter RS232 cable
- Serial port on computer or USB-to-RS-232 adapter
- Microsoft Windows: Windows XP, Vista, Windows 7, or Windows 8.
- Microsoft .NET Framework 4. (Will download automatically if not present)


Installation

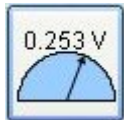
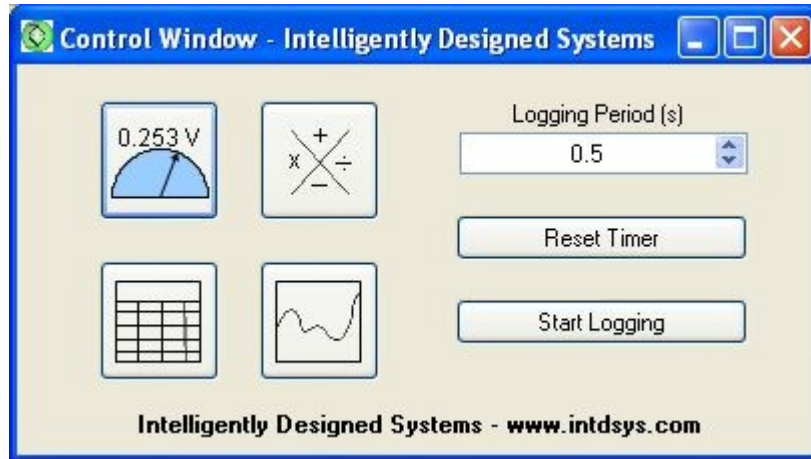
- Copy the install files to any folder on your computer.
- Extract the zipped files (if necessary) and run setup.exe. Close the program the first time it runs using the red X on the window and then run the program again.
- The program should be accessible from the Start->Programs->IntDSys folder
- If not, right click the 4000ZCDatalogger icon and create a shortcut.
- Move the shortcut to your desktop and restart your computer.

Troubleshooting

See the Troubleshooting section below.

Introduction

Starting the software initially opens the Control Window shown below. Button and control descriptions follow. The  will close this window, all other open windows and shut down the 4000 ZC Data Logger software. The control window will remain the topmost window at all times.



- Open Meter Display

Clicking this button opens a single Meter Display window. Each Meter Display is numbered. Meter displays are opened in ascending order. Three meter display windows may be open at once.



- Open Function Display

Clicking this button opens a single Function Display window. Three Function Display windows may be open at once.



- Open Data Table

Clicking this button opens the Data Table window. Only one Data Table window can be open at once.



- Open Graph Display

Clicking this button opens a Graph Display window. There is no limit to the number of Graph Displays that may be open at once.

“Logging Period (s)” - Data logging period in seconds

This numeric entry box sets the overall data logging period in seconds. This time determines how often data is written to the table, the graphs, and the file. The data update rate in individual Meter and Function Displays is determined by settings in each Display window and can be faster or slower than the overall data logging period in the Control Window.

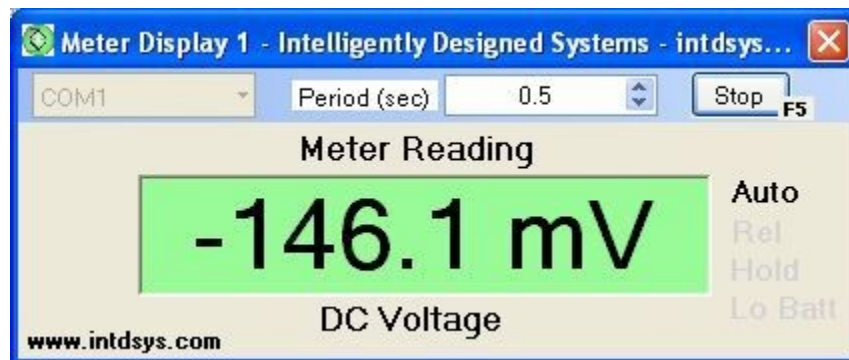
“Reset Timer” - Resets the overall acquisition timer


This button will reset the data acquisition timer to zero seconds. This will be reflected in the Data Table, Graphs, and saved file. Clicking this button will reset all graphs since they cannot display multiple points having the same time value.

“Start Logging” - Begins saving data to a file

Clicking this button opens a File Dialog window to choose where to save the data. Data is saved in comma-separated-value format with the same order shown in the Data Table. Data is saved at the data logging rate shown in the Control Window.

Meter Display Windows



The Meter Display window has COM port selection, update Period selection, Start/Stop, and display functions. It also has notifiers to the right of the data display that signal whether the meter is in Auto mode, Relative mode, Hold mode, or has a Low Battery. The  will close this window and release its chosen COM port.

COM Port selection

The top left pull down menu shows the available COM ports. Select the port for the desired meter. If a COM port is selected in multiple Meter Display windows, an error message box will appear when an attempt is made to Start acquisition from the same meter a second time.

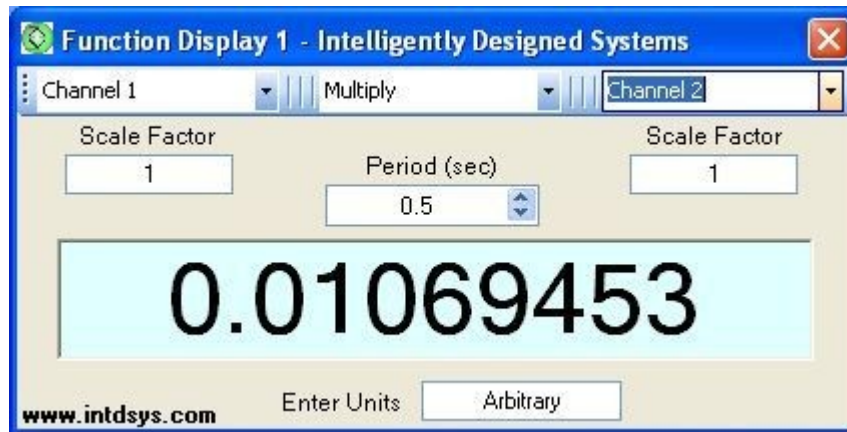
Update Period (s)

The middle numeric entry box sets the update period for the meter. The value is in seconds.

Start / Stop / F5

The top right button starts or stops meter reading. F5 can also be used to toggle between the two.

Function Display Windows



The Function Display Window has Meter selection, Function selection, Scale Factors for each channel and update Period selection. It also has a text entry box to allow the user to enter the appropriate units of the measurement.

Channel Pull Down Boxes

There are two channel pull down boxes that provide selection of the meters to be combined. All meters are shown in each box. Selecting a meter that is not active will keep the function window inactive as well. Meters may be selected any number of times in these windows.

Arithmetic Function Pull Down Box

The middle pull down box chooses whether to Add, Subtract, Multiply, or Divide the two selected channels. The operation order is; Left Channel : Operator : Right Channel.

Scale Factor Boxes

Each channel data value is scaled by the value in the Scale Factor box below it. Values may be positive or negative.

Update Period Control

The update period for the function display can be set with the Period control. The value

entered is in seconds. This is independent of the update period of either meter or the logging period in the Control Window.

Units Entry Box

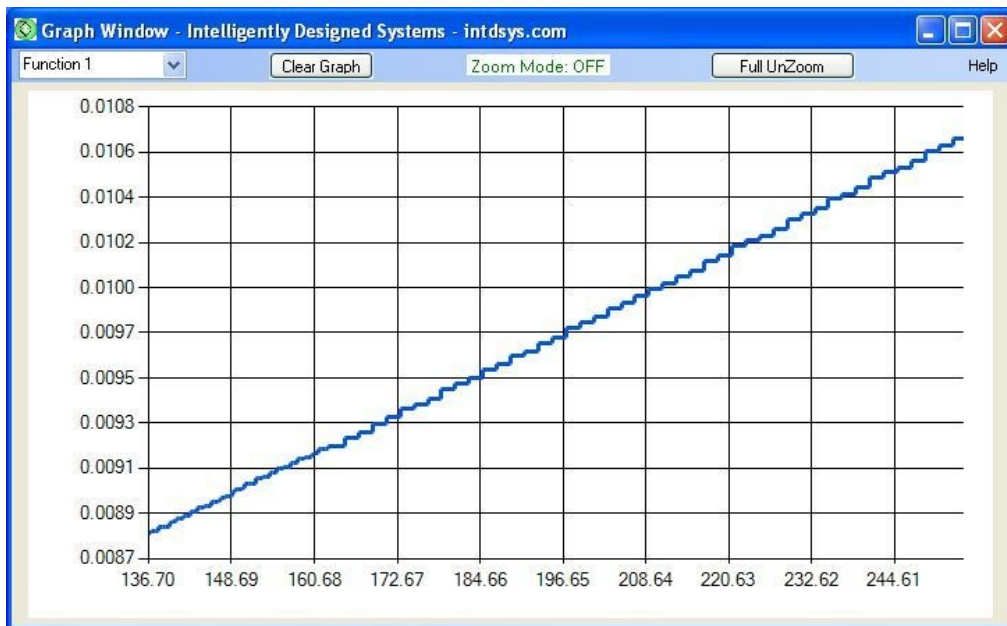
The units appropriate for the function can be entered in the box at the bottom of the window. These units will appear in the Data Table and the output file.

Data Table Window

Time (sec)	Meter 1 Value	Units	Meter 1 Text	Meter 2 Value	Units	Meter 2 Text	Meter 3 Value	Units	Meter3Text	Time (sec)	Func 1 Value	Units
261.1	-0.1468	V	-146.8 mV	-0.0735	V	-073.5 mV	off	f	off	261.1	0.0107898	Arbitr...
259.1	-0.1466	V	-146.6 mV	-0.0733	V	-073.3 mV	off	f	off	259.1	0.01074578	Arbitr...
257.1	-0.1465	V	-146.5 mV	-0.0732	V	-073.2 mV	off	f	off	257.1	0.0107238	Arbitr...
255.1	-0.1463	V	-146.3 mV	-0.0731	V	-073.1 mV	off	f	off	255.1	0.01069453	Arbitr...
253.1	-0.1461	V	-146.1 mV	-0.0729	V	-072.9 mV	off	f	off	253.1	0.01065069	Arbitr...
251.1	-0.1459	V	-145.9 mV	-0.0728	V	-072.8 mV	off	f	off	251.1	0.01062152	Arbitr...
249.1	-0.1457	V	-145.7 mV	-0.0727	V	-072.7 mV	off	f	off	249.1	0.01059239	Arbitr...
247.1	-0.1455	V	-145.5 mV	-0.0725	V	-072.5 mV	off	f	off	247.1	0.01054875	Arbitr...
245.1	-0.1453	V	-145.3 mV	-0.0724	V	-072.4 mV	off	f	off	245.1	0.01051972	Arbitr...
243.1	-0.1452	V	-145.2 mV	-0.0723	V	-072.3 mV	off	f	off	243.1	0.01049796	Arbitr...
241.1	-0.145	V	-145.0 mV	-0.0722	V	-072.2 mV	off	f	off	241.1	0.010469	Arbitr...
239.1	-0.1448	V	-144.8 mV	-0.0721	V	-072.1 mV	off	f	off	239.1	0.0104256	Arbitr...
237.1	-0.1446	V	-144.6 mV	-0.0719	V	-071.9 mV	off	f	off	237.1	0.01039674	Arbitr...
235.1	-0.1445	V	-144.5 mV	-0.0718	V	-071.8 mV	off	f	off	235.1	0.0103751	Arbitr...
233.1	-0.1443	V	-144.3 mV	-0.0717	V	-071.7 mV	off	f	off	233.1	0.01033188	Arbitr...
231.1	-0.1441	V	-144.1 mV	-0.0716	V	-071.6 mV	off	f	off	231.1	0.01030315	Arbitr...

The Data Table window shows all Meters and Functions. For each Meter and Function, the data is provided in 3 columns: Value in absolute units, Units, and Text column with value and scaled units. The Meter and Function column sets are separated by a repeated column of the Time values.

Graph Windows



The Graph windows plot data from a chosen Meter or Function. The graph can be cleared using the top left button. Detailed zoom functions are also implemented and described below.

Data Selection Pull Down Box

The top left pull down box chooses the data channel or function to be plotted. If a channel or function is not active, nothing will be plotted. The window plots the most recent 100 points of data using autoscaled axes.

Clear Graph Button

This button removes all points from the graph and starts plotting new data as it becomes available. This does not reset the time axis values.

Zoom Mode

Zoom Mode can be activated by clicking in the graph area with left or right mouse buttons or by clicking the Full UnZoom button at the top right of the window. In Zoom Mode the available operations are:

- Left click – zooms in on the time axis by one step
- Ctrl-Left click – zooms out on the time axis by one step
- Right click – zooms in on the y-axis by one step
- Ctrl-Right click – zooms out on the y-axis by one step
- Mouse wheel – scrolls in the vertical direction by one step for each click
- Full UnZoom button – Zooms out fully on both axes to display the full data set.
- Shift-Left click – Turns off Zoom Mode and returns to plotting data.

Data continues to be acquired while in Zoom Mode. The most recent 100 data points will be shown when Zoom Mode is exited.

Troubleshooting

- After installation, make sure to follow the steps above to close the program and restart.
- If the meter display cannot be read, turn off the meter with the program running, then quit the program. Restart the meter and then the program.
- If the meter display cannot be read or an error occurs when “Start Logging Data” is clicked, make sure you have chosen the correct COM port.