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# **Data Digitizer Documentation**

***Release 1.0.0***

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**Apr 20, 2021**



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## INTRODUCTION

### 1.1 Description

DataDigitizer is a simple graphical tool for digitizing data from images.

In terminal enter the following command:

```
python -m datadigitizer
```

The cursor is used to point a specific position in the graph whereas all operations are done through keyboard combinations or through the main menu.

Legend:

- Red crosses are data points
- Blue crosses are Xmin and Xmax
- Green crosses are Ymin and Ymax

Commands:

- <Ctrl-o> for loading image.
- <Ctrl-a> add data point.
- <Hold a+Left Click> add data point.
- <Left Click> select a data point.
- <Hold Ctrl+Left Click> multiple data point selection.
- <Ctrl-g> set Xmin from last data point or from selected data point.
- <Ctrl-h> set Xmax from last data point or from selected data point.
- <Ctrl-j> set Ymin from last data point or from selected data point.
- <Ctrl-k> set Ymax from last data point or from selected data point
- <Ctrl-l> set all limits from last 4 data points or from last 4 selected data points.
- <Ctrl-n> remove all limits.
- <Ctrl-z> remove last data point.
- <Ctrl-d> remove selected data point.
- <Ctrl-D> remove all data points.
- <Ctrl-m> compute the data points.
- <Ctrl-s> save data points.
- <Ctrl-w> clear all.

A pdf version of the documentation can be found [here](#) DataDigitizer

## 1.2 How to install

```
$ python setup.py install

or

$ pip install datadigitizer
```

## 1.3 Dependencies

```
numpy>=1.17
matplotlib>=3.0.0
Pillow>=6.0.0
```

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```
<program> Copyright (C) <year> <name of author>
This program comes with ABSOLUTELY NO WARRANTY; for details type `show w'.
This is free software, and you are welcome to redistribute it
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```

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## TUTORIAL

### 2.1 Open the app

Start the application by entering in the terminal:

```
python -m datadigitizer
```

The main windows looks like in figure *Main Window*

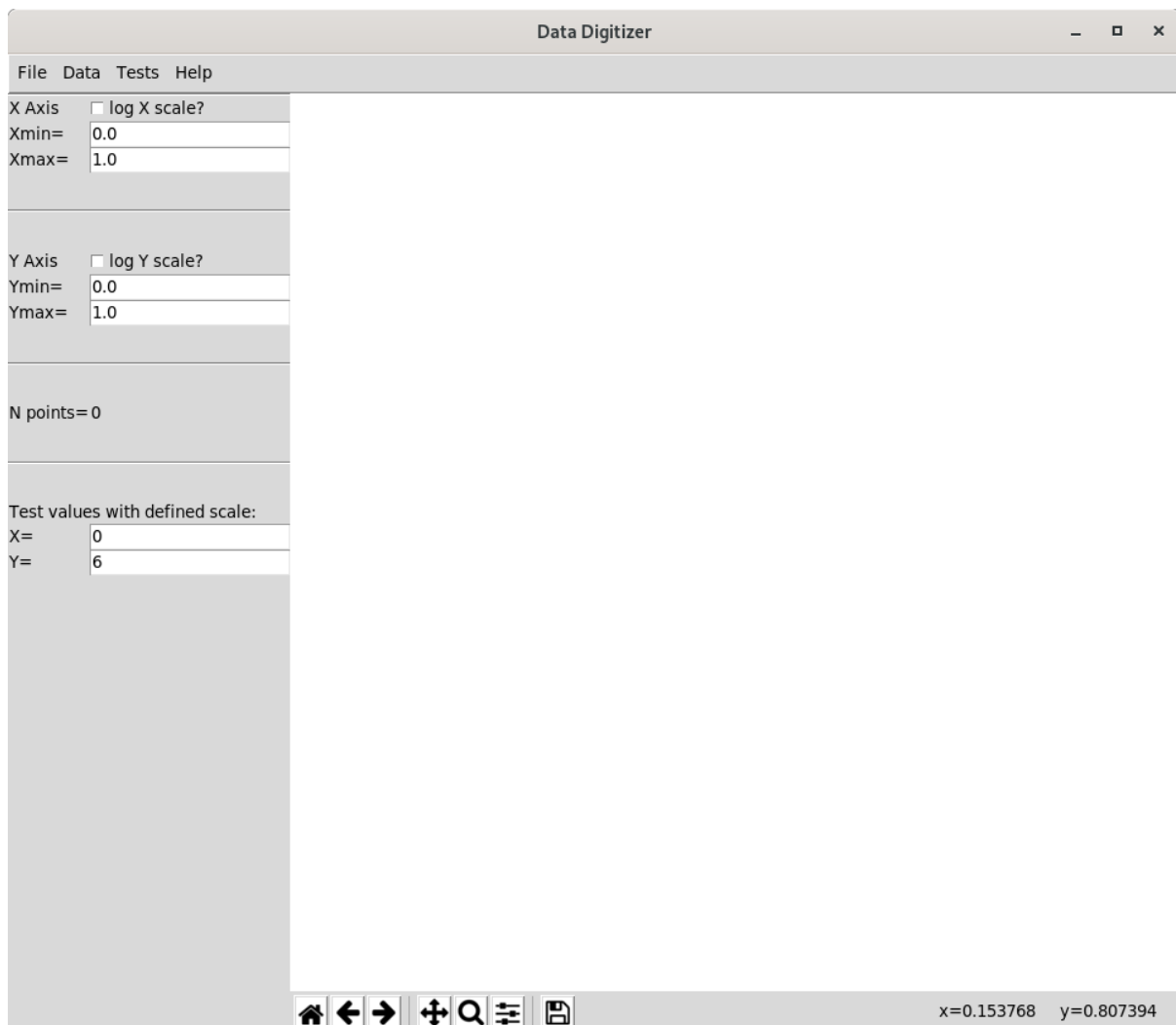


Fig. 1: Main Window

A quick overview of the different commands are shown in Help->How to use.

## 2.2 Open the image

Open an image from which you want to extract data by pressing <Ctrl-o>. Browse to the image and click OK.

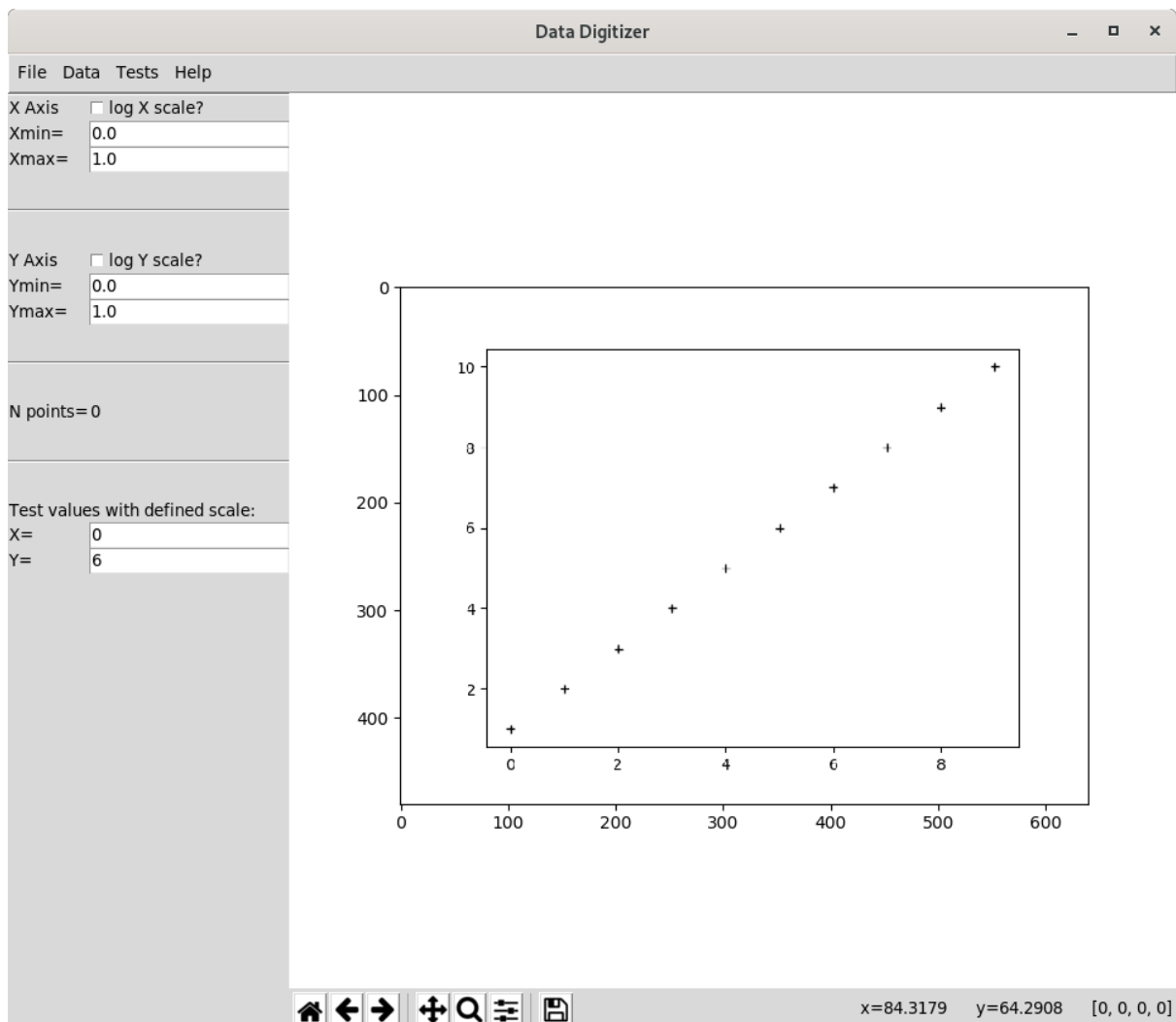


Fig. 2: Open graphic from which to extract data

## 2.3 Position XY Limits

Position 4 crosses for the axis limits in the order Xmin, Xmax, Ymin, Ymax by pointing them with the mouse and adding them by clicking <Ctrl-a>. You can hold down <a>, point with the mouse and left click for adding a red cross.

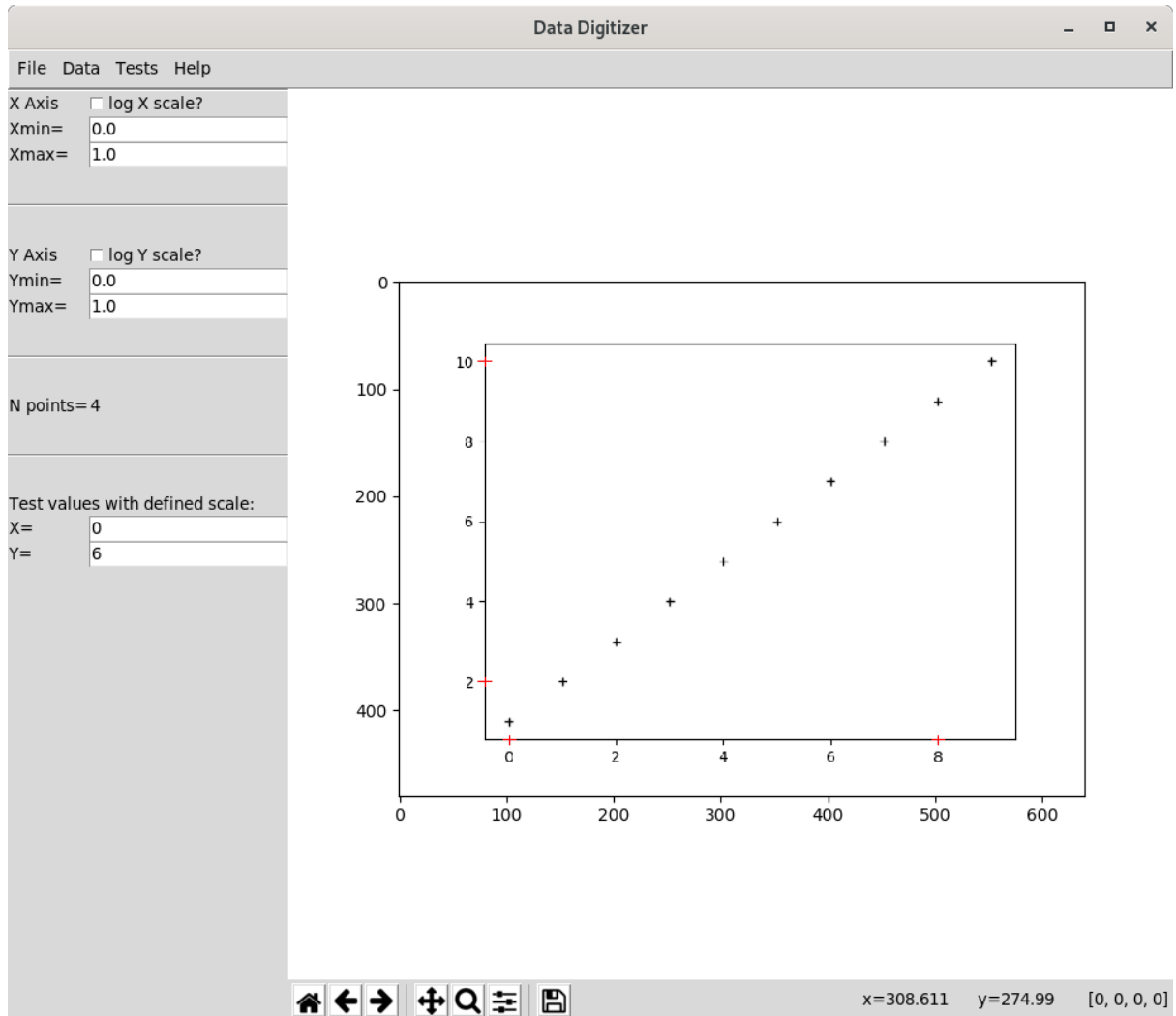


Fig. 3: Open graphic from which to extract data

## 2.4 Set XY Limits

Press in the order <Ctrl-k>, <Ctrl-j>, <Ctrl-h>, <Ctrl-g>. It will set the Ymax, Ymin, Xmax and Xmin from the last (selected) data point, respectively. \* When <Ctrl-k> is pressed The last of the 4 red crosses will become the Ymax value and will colored in blue. \* When <Ctrl-j> is pressed The last of the 3 red crosses will become the Ymin value and will colored in blue. \* When <Ctrl-h> is pressed The last of the 2 red crosses will become the Xmax value and will colored in green. \* When <Ctrl-g> is pressed The last red cross will become the Xmin value and will colored in green.

You can set the XY limits in the different order if needed and you can also set all the limits at once from the last 4 data points (red crosses) by pressing <Ctrl-l>.

It is also possible to select a limit with a left click and adjust it by pressing left, right, up and down.

The limits can be reverted to data by pressing <Ctrl-n>.

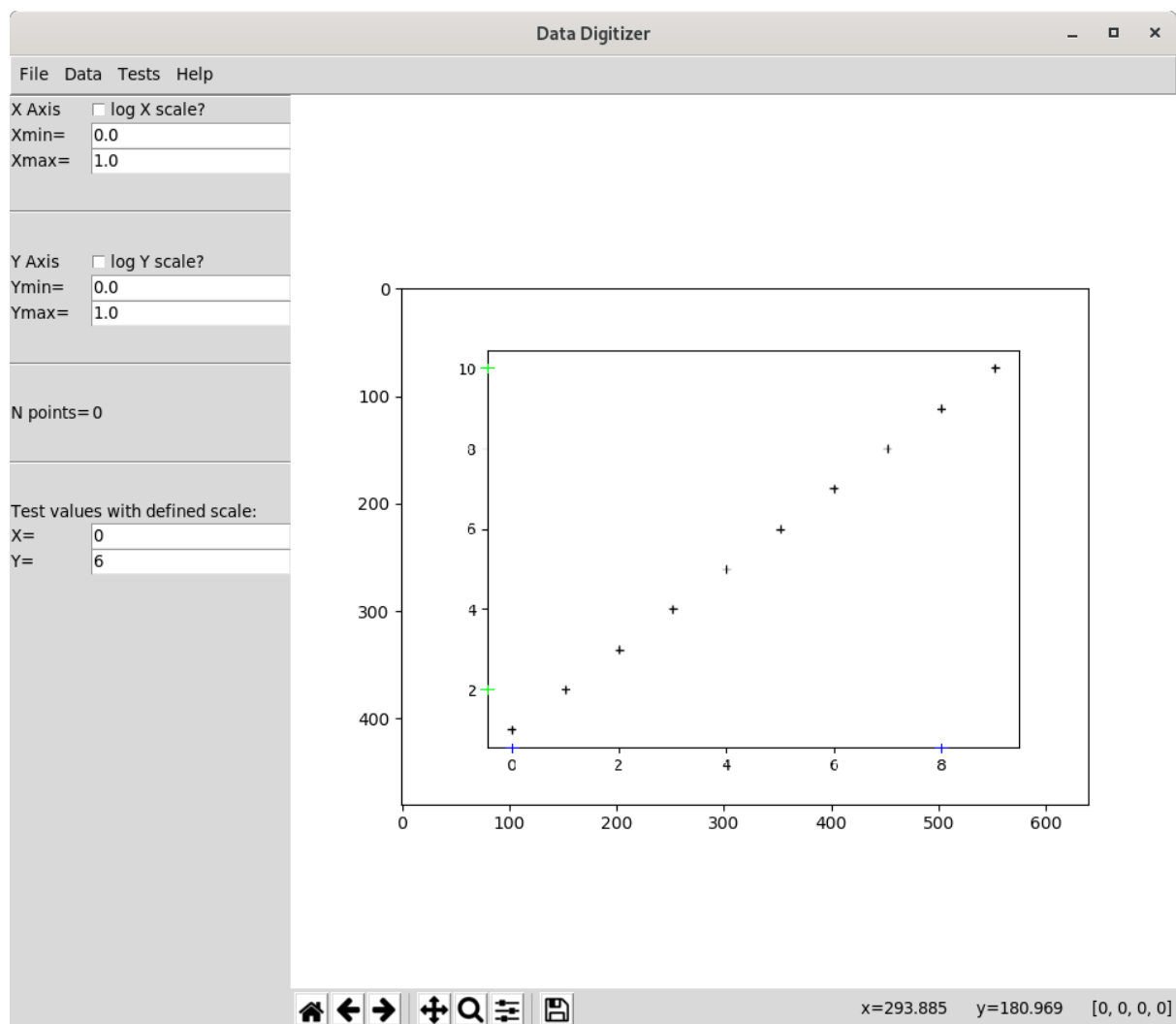


Fig. 4: Set XY limits

## 2.5 Enter XY Limits

Enter the corresponding value for Xmax, Xmin, Ymin and Ymax and press <Enter>. Switch to log scales if needed.

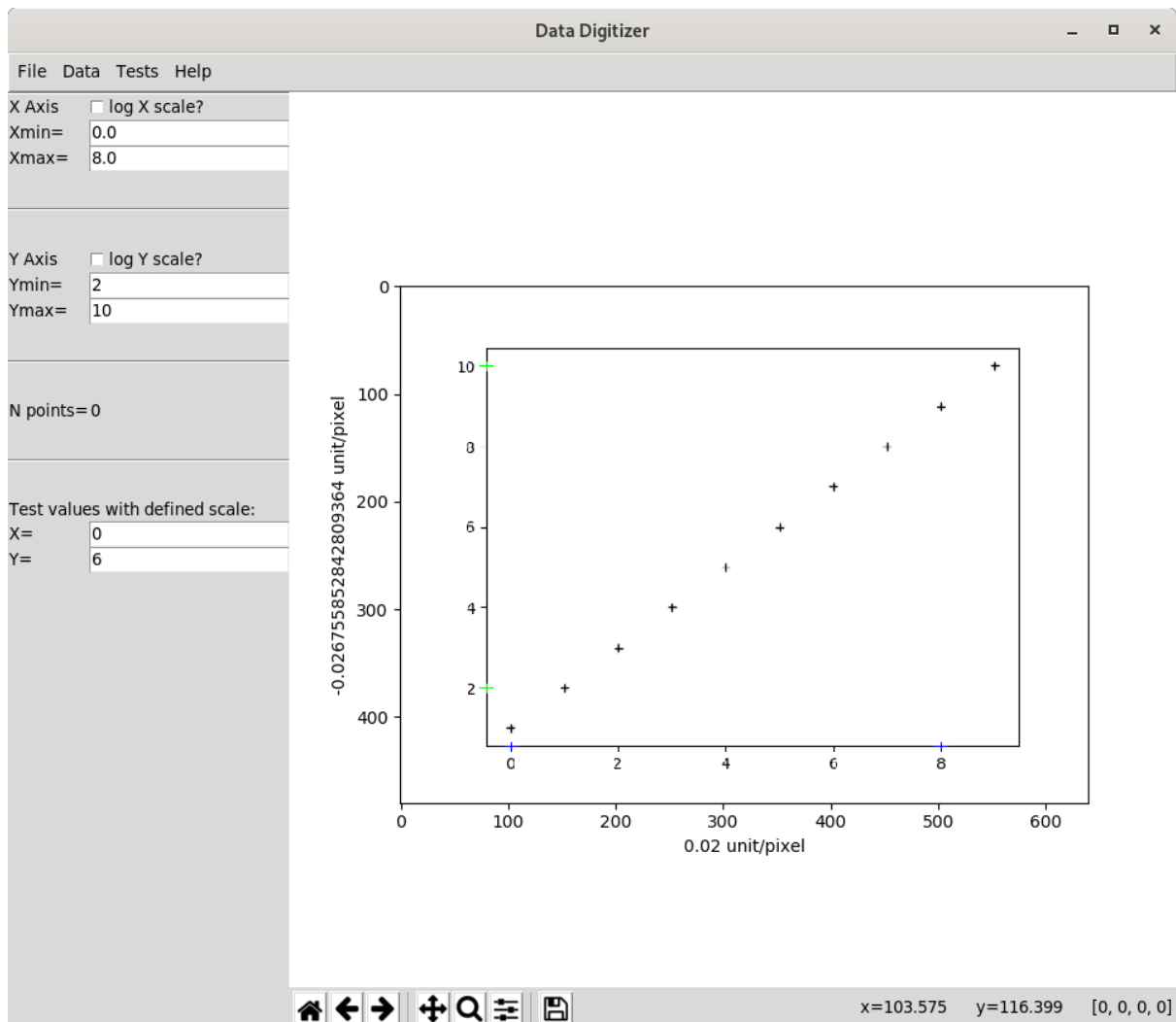


Fig. 5: Set XY values

## 2.6 Add Data Points

Add data points by pointing them with the mouse and adding them by clicking <Ctrl-a>. You can hold down <a>, point with the mouse and left click for adding a red cross. Once a data point is added you can adjust its position by pressing left, right, up and down arrows. Press <Ctrl-m> to compute the data with the defined XY scales. Press <Ctrl-s> to save data.

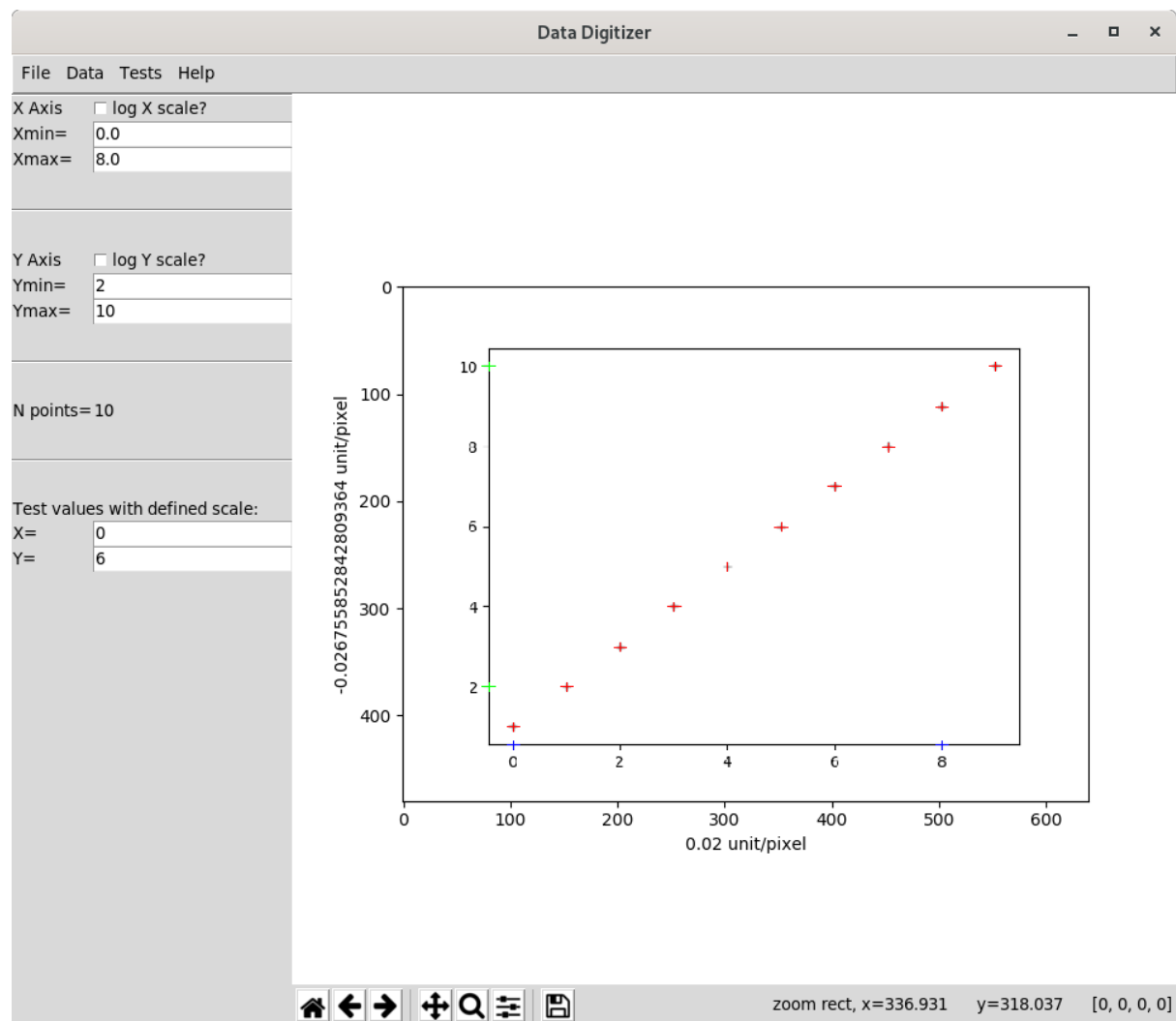


Fig. 6: Set data values



## 2.7 Test Scale Values

It is also possible to test the X/Y scales by entering values, e.g.  $X=0$  and  $Y=6$ , to check if the scales are properly set.

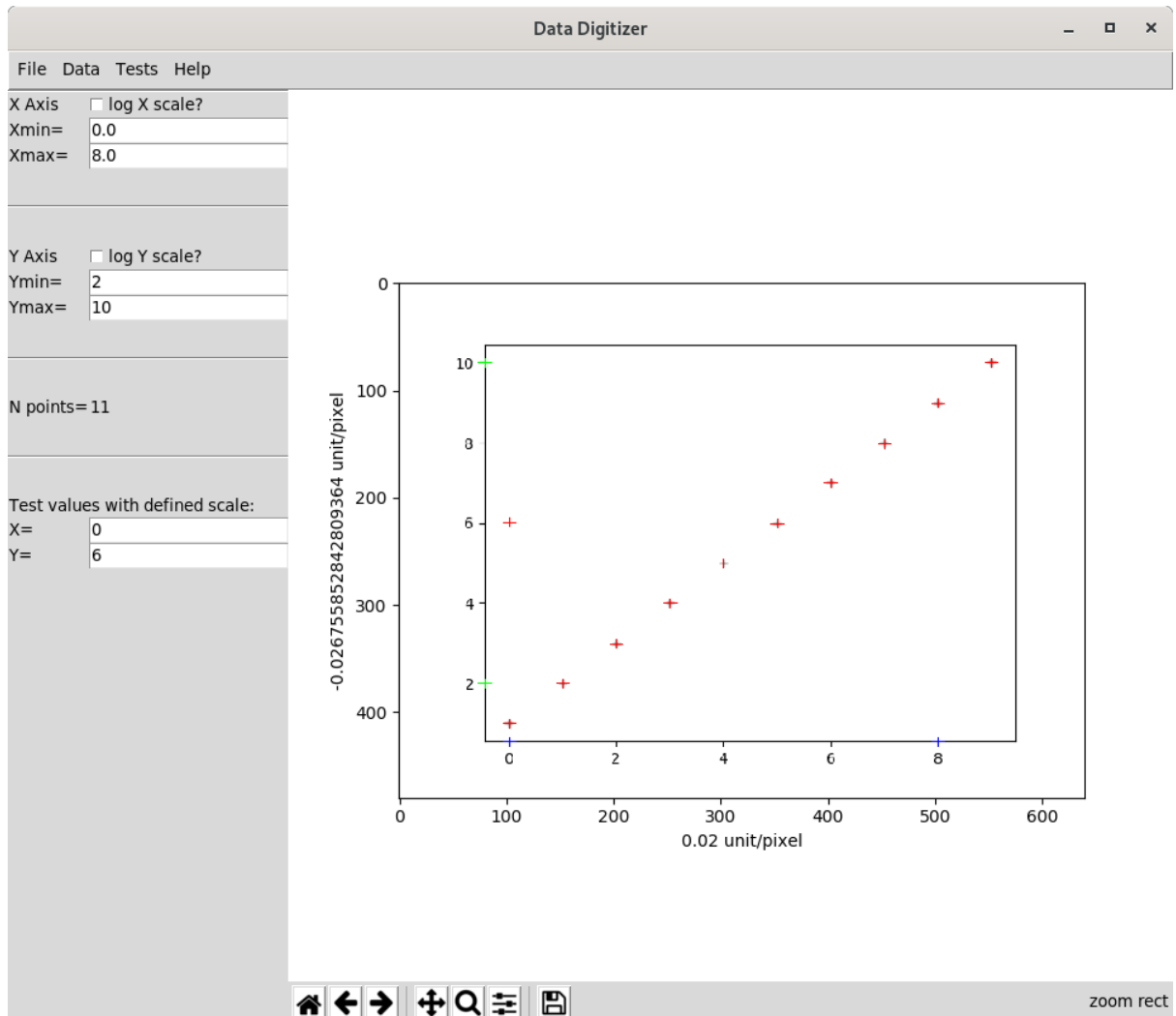


Fig. 7: Test scale



## RELEASE NOTES

### 3.1 Data Digitizer 1.0.0 Release Note

#### 3.1.1 Highlights

Initial release with basic features:

- Import image
- Set scale
- Multiple selection of data points
- Compute and save data

#### 3.1.2 Contributors

Milan Skocic

#### 3.1.3 Commits

PR#5-BUG: Fixed unwanted autoscale for each draw of the image threshold.

PR#4-ENH: New features with interactive points

PR#3-ENH: Cleanup.

PR#2-ENH: Added tests in the main app.

PR#1-ENH: Added tests.

#63fa293-Implementing FigureFrame in main app.

#6b25247-Initial commit with functional GUI and basic functions for adding points.



## AUTOGENERATED DOCUMENTATION

### 4.1 Graphical FrontEnd

Main GUI.

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Author: Milan Skocic <[milan.skocic@gmail.com](mailto:milan.skocic@gmail.com)>

**class** datadigitizer.gui.AboutWindow (master)  
About window.

#### Parameters

**master: tkinter widget** Container.

**class** datadigitizer.gui.App (master=None)

The cursor is used to point a specific position in the graph whereas all operations are done through keyboard combinations or through the main menu.

Legend:

- Red crosses are data points
- Blue crosses are Xmin and Xmax
- Green crosses are Ymin and Ymax

Commands:

- <Ctrl-o> for loading image.
- <Ctrl-a> add data point.
- <Hold a+Left Click> add data point.
- <Left Click> select a data point.
- <Hold Ctrl+Left Click> multiple data point selection.
- <Ctrl-g> set Xmin from last data point or from selected data point.
- <Ctrl-h> set Xmax from last data point or from selected data point.
- <Ctrl-j> set Ymin from last data point or from selected data point.

- <Ctrl-k> set Ymax from last data point or from selected data point
- <Ctrl-l> set all limits from last 4 data points or from last 4 selected data points.
- <Ctrl-n> remove all limits.
- <Ctrl-z> remove last data point.
- <Ctrl-d> remove selected data point.
- <Ctrl-D> remove all data points.
- <Ctrl-m> compute the data points.
- <Ctrl-s> save data points.
- <Ctrl-w> clear all.

### Parameters

**master: tkinter.Tk instance** Root instantiation of tkinter.

### Methods

---

<code>run()</code>	Start the application.
--------------------	------------------------

---

stop	
------	--

**run ()**  
Start the application.

**class** datadigitizer.gui.**FigureFrame** (*master*, *\*\*kwargs*)  
Construct a Ttk Frame with parent master.

#### STANDARD OPTIONS

class, cursor, style, takefocus

#### WIDGET-SPECIFIC OPTIONS

borderwidth, relief, padding, width, height

### Methods

refresh	
---------	--

**class** datadigitizer.gui.**HowToUse** (*master*)  
How to use window.

### Parameters

**master: tkinter widget** Container.

**class** datadigitizer.gui.**ScrolledFrame** (*master*, *\*\*kwargs*)  
Scrolled Frame widget which may contain other widgets and can have a 3D border.

### Parameters

**master: tkinter widget** Master container.

**kwargs: dict, optional** Keyword arguments for the scrolled frame.

### Attributes

**canvas** Return the canvas that contains the scrollbars.

**frame** Return the frame that contains the widgets.

**property canvas**

Return the canvas that contains the scrollbars.

**property frame**

Return the frame that contains the widgets.

**class** `datadigitizer.gui.Transform`(*values\_min: float, values\_max: float, pix\_min: Union[int, float], pix\_max: Union[int, float], which: str = 'linear'*)

Transform class converting values coordinates into pixel coordinates.

**Parameters**

**values\_min: int, float** Minimum value.

**values\_max: int, float** Maximum value.

**pix\_min: int, float** Minimum pixel.

**pix\_max: int, float** Maximum pixel.

**which: str, optional** Which kind of transform i.e. linear or log.

**Attributes**

**backward\_scale** Return the scale for transforming pixels into values.

**forward\_scale** Return the scale for transforming values into pixels.

**Methods**

<code>backward(x)</code>	Transform pixels to values.
<code>forward(x)</code>	Transform values to pixels.

**backward** (*x: Union[int, float, numpy.ndarray]*)

Transform pixels to values.

**Parameters**

**x: int or floats or array-like, shape(n,)** Pixels to be transformed.

**Returns**

**values: int or floats or array-like, shape(n,)** Values corresponding to the pixels.

**property backward\_scale**

Return the scale for transforming pixels into values.

**forward** (*x: Union[int, float, numpy.ndarray]*)

Transform values to pixels.

**Parameters**

**x: int or floats or array-like, shape(n,)** Values to be transformed.

**Returns**

**pixels: int or floats or array-like, shape(n,)** Values corresponding to the pixels.

**property forward\_scale**

Return the scale for transforming values into pixels.





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