dual_axes

Adds a second axis with a linear conversion to other set of units to plot

Syntax:

```
dual_axes(Axis,Title,Type,Conversion,Name,...)
```

Description:

Adds a unit converted second axis to either y or x, or both. The second converted axis is placed opposed or on the same side as the main one. Axes are linked and can be panned and returned to home. *Opposed: the main x-axis is at the bottom and the added generated one by this funcion will be at the top of the plotting area; the second y-axis will be added to the right. *Same: the generated axis will be placed offset from the main one to the left (if y) or below (if x).

Notes:

- Title must be fed and called by the function. If no title is desired, feed a blank ([]) or empty string ('')
- All other modifiers need to be called BEFORE this function

Inputs:

- Axis: Axis handler where to insert dual_axes
- Title: Figure title. DO NOT CALL TITLE OUTSIDE OF THIS!
- Type: 'x','y', or 'xy' for opposed to main axes; 'xs','ys', or 'xys' for same side as main axes.
- Conversion: Conversion factor from unit on plot to the one you want
- Name: New unit label
- [conv2]: Y-axis conversion factor when 'xy' or 'xys' is selected
- [name2]: Y-axis label when 'xy' or 'xys' is selected

Outputs:

- [Axis]: [optional] Axis handler(s) of dual if needed to access properties

Usage:

You must call this function AFTER all figure modifiers (i.e: legends, limits, labels, etc.) EXCEPT title. This function calls the title, if no title is desired, enter a blank (i.e.: [] or '')

- 'x' OR 'xs': X-axis

```
dual_axes(gca,[],'x',1/.7457,'Power [hp]')
```

- 'y' OR 'ys': Y-axis

```
dual_axes(gca,[],'y',0.0016,'SFC [lb/hp-hr]')
```

- 'xy' OR 'xys': Both Axes

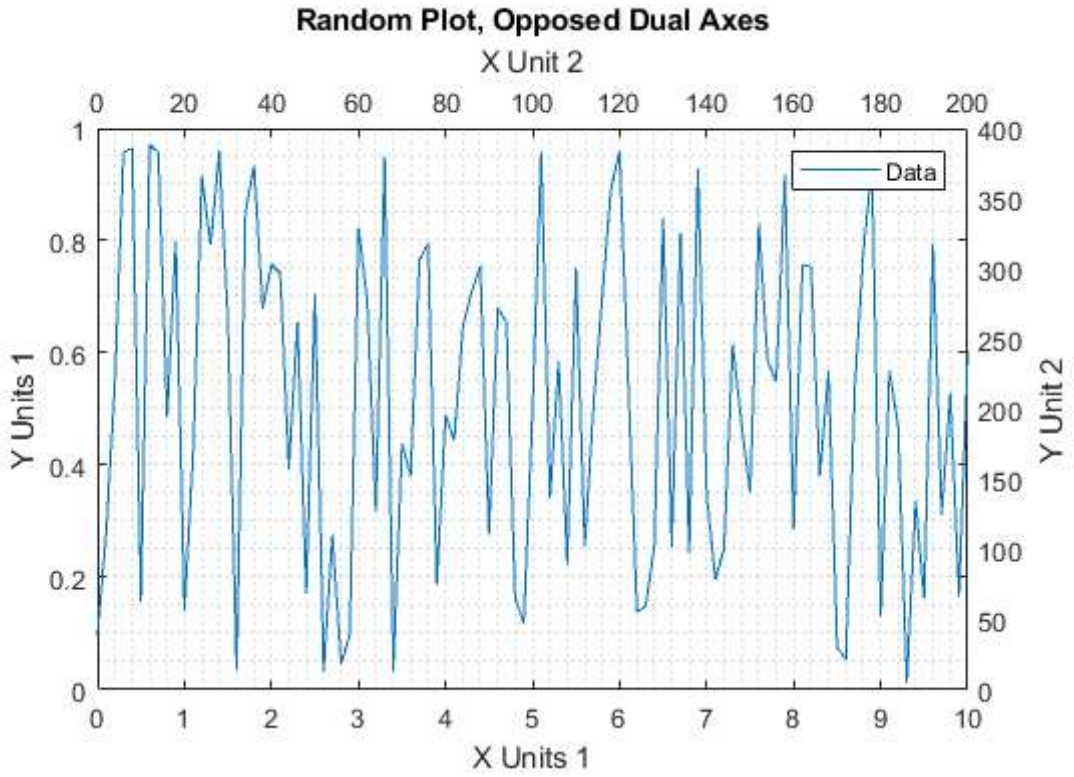
```
dual_axes(gca,[],'xy',1/.7457,'Power [hp]',0.0016,'SFC [lb/hp-hr]')
```

Examples:

You can copy this code and paste it into the command window or select it and hit F9 on your keyboard:

Both axes, opposed

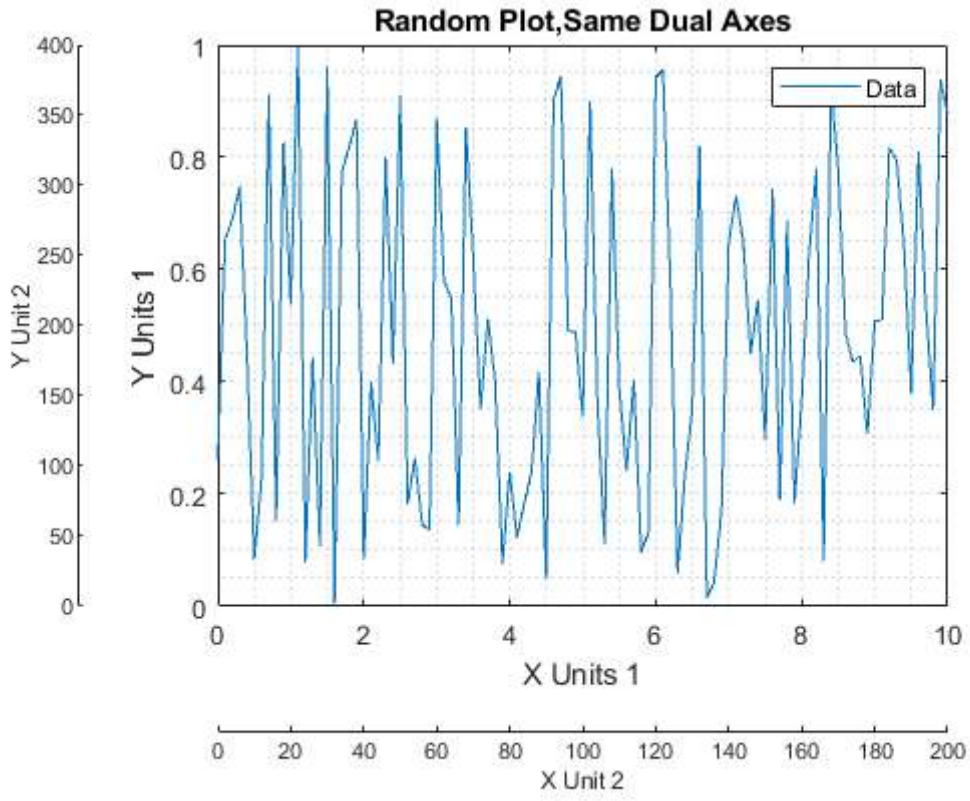
```
figure;
x=0:0.1:10;
y=rand(size(x));
plot(x,y,'-');
grid minor
legend('Data');
xlabel('X Units 1');
ylabel('Y Units 1');
dual_axes(gca,'Random Plot, Opposed Dual Axes',...
    'xy',20,'X Unit 2',400,'Y Unit 2');
```



Both axes, same

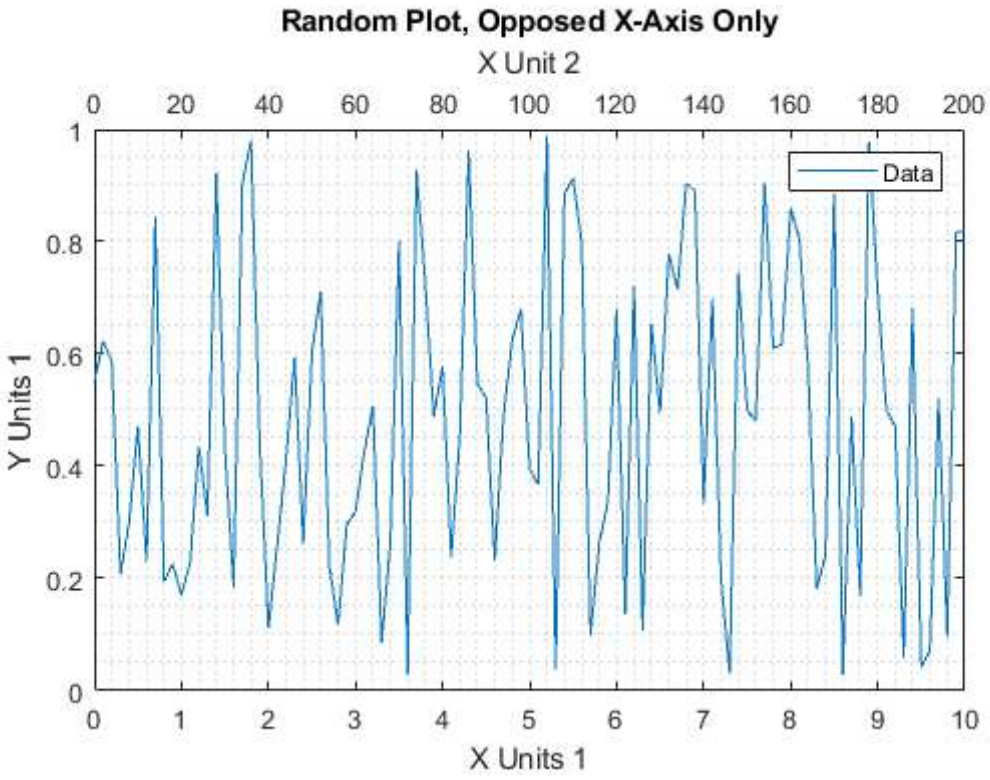
```
figure;
x=0:0.1:10;
y=rand(size(x));
plot(x,y,'-');
grid minor
legend('Data');
xlabel('X Units 1');
ylabel('Y Units 1');
dual_axes(gca,'Random Plot,Same Dual Axes',...
```

```
    'xys',20,'X Unit 2',400,'Y Unit 2');
```



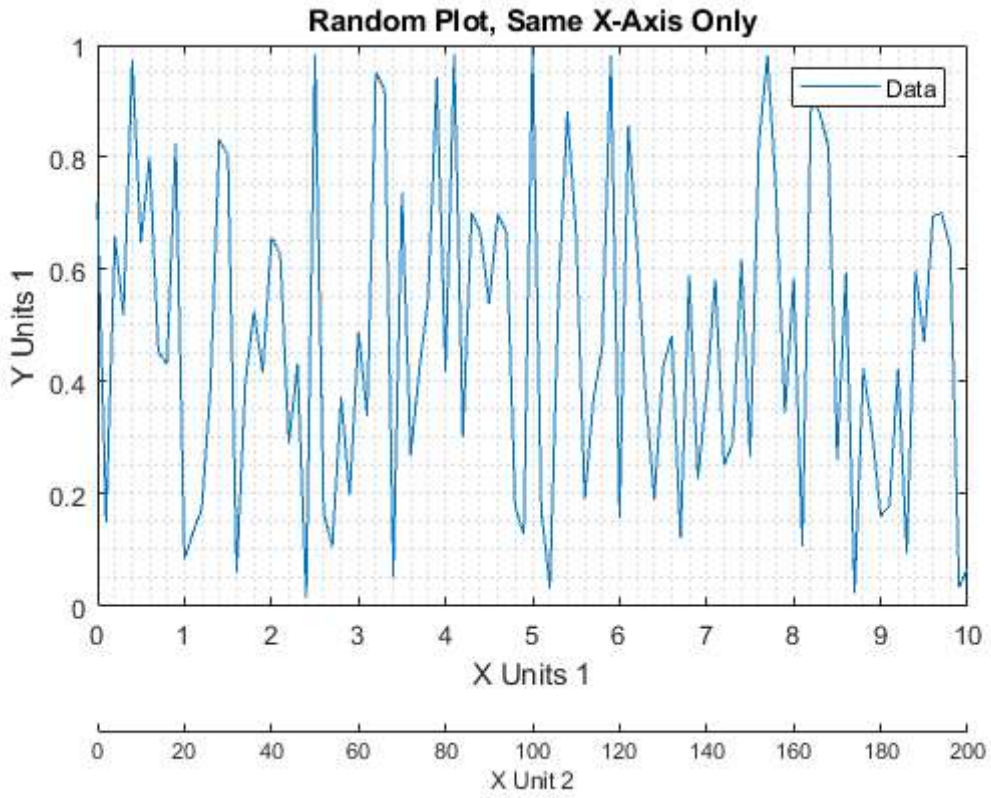
X-axis, opposed

```
figure;
x=0:0.1:10;
y=rand(size(x));
plot(x,y,'-');
grid minor
legend('Data');
xlabel('X Units 1');
ylabel('Y Units 1');
dual_axes(gca,'Random Plot, Opposed X-Axis Only',...
    'x',20,'X Unit 2');
```



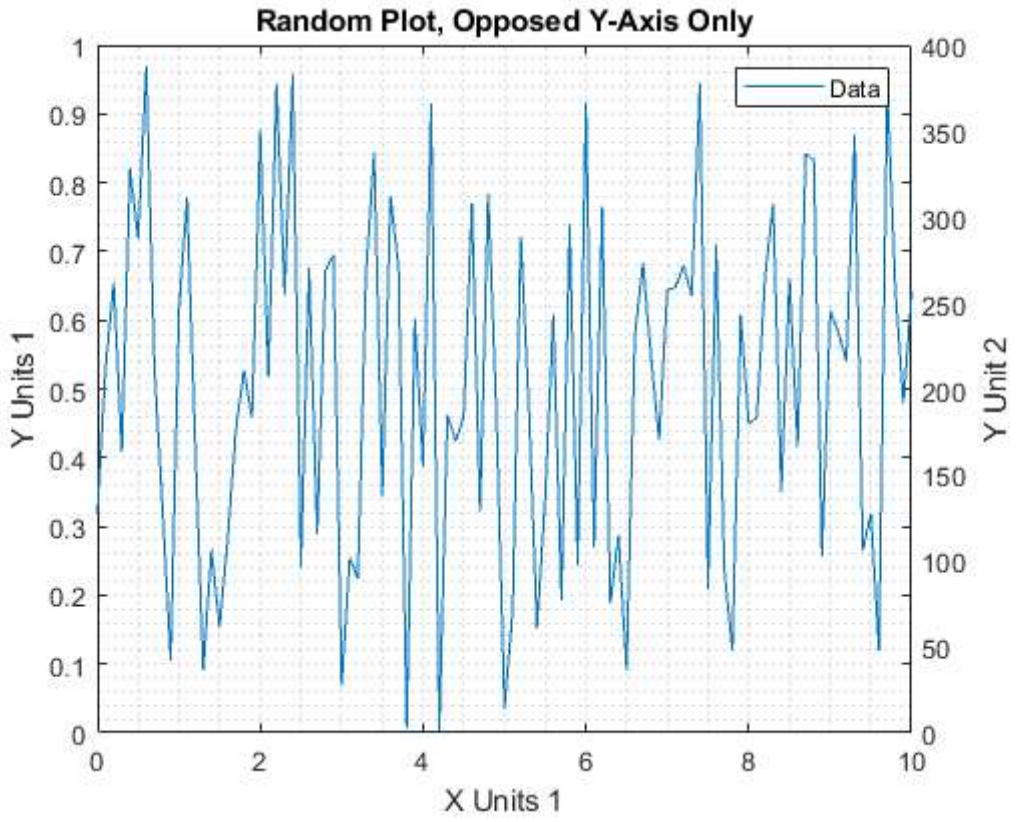
X-axis, same

```
figure;
x=0:0.1:10;
y=rand(size(x));
plot(x,y,'-');
grid minor
legend('Data');
xlabel('X Units 1');
ylabel('Y Units 1');
dual_axes(gca,'Random Plot, Same X-Axis Only',...
    'xs',20,'X Unit 2');
```



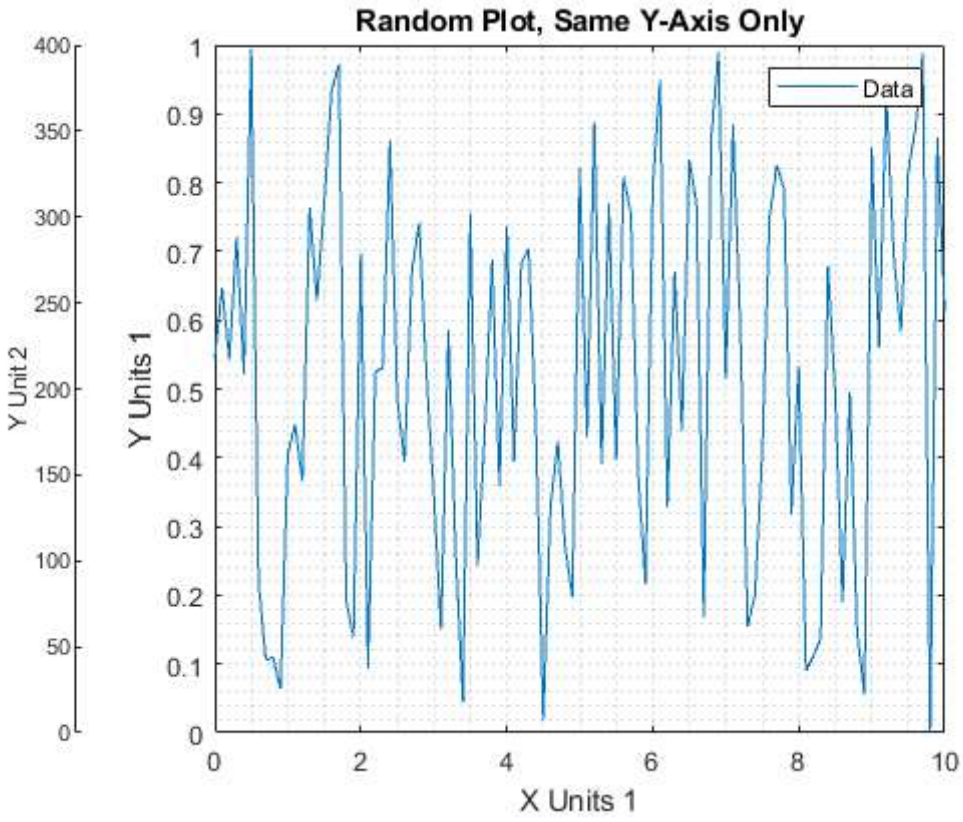
Y-axis, opposed

```
figure;
x=0:0.1:10;
y=rand(size(x));
plot(x,y,'-');
grid minor
legend('Data');
xlabel('X Units 1');
ylabel('Y Units 1');
dual_axes(gca,'Random Plot, Opposed Y-Axis Only',...
    'y',400,'Y Unit 2');
```



Y-axis, same

```
figure;
x=0:0.1:10;
y=rand(size(x));
plot(x,y,'-');
grid minor
legend('Data');
xlabel('X Units 1');
ylabel('Y Units 1');
dual_axes(gca,'Random Plot, Same Y-Axis Only',...
    'ys',400,'Y Unit 2');
```



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