

UseCase.0046

Creating Nice 2D-Diagrams

Keywords: 2D view, z=f(x,y), axis, axes, bitmap, mesh, contour, plot, font size, color lookup table, presentation

Description

- This use case demonstrates how to configure diagrams in a way they meet the demands of an appealing presentation.
- The configuration of 2D-diagrams (used for z=f(x,y)) will be shown here.

Standard View Parameters



After loading the 2D sample diagram, it will be shown using the standard view parameters.

Window Size

General Window Size 570, 610 Aspect Rabo True To Scale True Color Lookup Table Color Lookup Table Data Auto Scaling of Data Format of color scale Interrolated View True	Sun
Window Size 570, 610 Aspect Ratio True True To Scale True Color Lookup Table Midnight S Data Midnight S Auto Scaling of Data True Format of color scale Engineering Interrolated View True	òun
Aspect Hatio True To Scale True Color Lookup Table Color Lookup Table Data Auto Scaling of Data Format of color scale Interrolated View True	òun
True To Scale True Color Lookup Table Midnight S Data Auto Scaling of Data Format of color scale Engineering Interrolated View True	Sun
Color Lookup Table Color Lookup Table Data Auto Scaling of Data Format of color scale Interrolated View True	Sun
Color Lookup Table Midnight S Data Auto Scaling of Data Format of color scale Engineering Interrolated View True	Sun
Data Auto Scaling of Data True Format of color scale Engineering Interroplated View True	
Auto Scaling of Data True Format of color scale Engineering Internolated View True	
Format of color scale Engineering	
Internolated View True	
Labels	
Font Size 10	
Selection (General)	
Selection Mode Line	
Selection (Line)	
Display Line Marker False	
Selection (Point)	
Display Point Marker False	
Selection (Region)	
Display Rectangular or Ellip False	
View Mode	
3D Mode False	
X-Axis	
Format of X-Axis Engineering	
Minimum Number of Ticks 2	
X-Axis Range [-2.8 mm; 3.1 m	nm]
Y-Axis	
Format of Y-Axis Engineering	
Minimum Number of Ticks 2	
Y-Axis Range [-3 mm; 2.64 m	mj

The window size can be defined by just dragging one of the corners as well as by entering the desired size into the Property Browser.



Font Size

'rop	erty Browser	
View	Object Selections	
⊿	General	
\triangleright	Window Size	570, 643
⊿	Aspect Ratio	
	True To Scale	True
⊿	Color Lookup Table	
	Color Lookup Table	Midnight Sun
⊿	Data	
	Auto Scaling of Data	True
	Format of color scale	Engineering
	Interpolated View	True
4	Labels	
	Font Size	12
4	Selection (General)	
	Selection Mode	Line
۵	Selection (Line)	
	Display Line Marker	False
⊿	Selection (Point)	
	Display Point Marker	False
⊿	Selection (Region)	
	Display Rectangular or Ellip	False
۵	View Mode	
	3D Mode	False
4	X-Axis	
	Format of X-Axis	Engineering
	Minimum Number of Ticks	2
\triangleright	X-Axis Range	[-2.8 mm; 3.1 mm]
⊿	Y-Axis	
	Format of Y-Axis	Engineering
	Minimum Number of Ticks	2
⊳	Y-Axis Range	[-3 mm; 2.64 mm]
	-	
F or Fon	nt Size t size of the labels	

Increasing the font size improves the readability of the axes labels and the tick labels.



Coordinate Range

Prop	perty	Browse	r			
Viev	w	Object	Selections			
⊿	Ge	neral				
\triangleright	Win	idow Siz	e		570, 610	
⊿	Aspect Ratio					
	Tru	e To Sca	ale		True	
⊿	Co	lor Lool	kup Table			
	Col	or Looku	ıp Table		Midnight S	un
⊿	Dat	ta				
	Aut	o Scaling	g of Data		True	
	For	mat of co	olor scale		Engineering	
	Inte	rpolated	View		True	
4	Lat	bels				
	For	nt Size			12	
⊿	Sel	ection	(General)			
	Sel	ection M	ode		Line	
⊿	Sel	ection ((Line)			
	Dis	play Line	e Marker		False	
⊿	Sel	ection	(Point)			
	Dis	play Poi	nt Marker		False	
⊿	Sel	ection	(Region)			
	Dis	play Red	ctangular or	Ellip	False	
⊿	Vie	w Mode	•			
	3D	Mode			False	
⊿	X-/	lxis 🛛				
	For	mat of X	-Axis		Engineering	
_	Min	imum Ni	umber of Tic	:ks	2	
D	X-A	xis Rang	ge		[-1 mm; 1 mm]	
4	Y-/	l xis				
	For	mat of Y	-Axis		Engineering	
_	Min	imum Ni	umber of Tic	cks	2	
Þ	Y-A	xis Rang	ge		[-2 mm; 0 m]	
X-/ Dis	play	ed range	e on x axis			

If a certain coordinate range shall be shown, this can be specified via Property Browser too.



Width of the Color Legend



If the color legend needs more space, the color bar can be dragged to the desired horizontal position via mouse.

Color Lookup Table I



The color lookup table can be changed via View ribbon > Color Lookup Table"



Color Lookup Table II



- It may be necessary to use a non-linear lookup table in order to see some features.
- The context menu (Color Lookup Table > Edit Color Lookup Table) provides a dialog for this change.



Color Lookup Table III



Defining a logarithmic function
with a parameter of 15...

...will highlight some features.



Color Lookup Table IV

olor Lookup Table Definition		
Color Definition	Mapping Function	Marker Colors
		Color 1 Transparent
Color Edi		Color 2
(238; 130; 238) 🥖		
(0; 0; 255)		Highlighting Color
(135; 206; 235) 🥖		
1 (0; 128; 0)		Suggest Marker Colors
(255; 255; 0)		
(255; 165; 0)	Min Max	
(255: 0: 0)	Logarithmic Function -	
	Eunction	
Interpolate Color	s Parameter 15	
	ОК	Cancel Help

Using stepped colors instead of interpolated colors will produce some kind of contour plot.



Selection Based Scaling I





- Local features can be highlighted even with a linear color scale if we map the complete color map to a local value range.
- With an activated rectangular marker...
- ...we have to mark the range that shall be used for rescaling.

Selection Based Scaling II



- Choosing "Selection Based Scaling" will lead to a rescaled color legend where the available color range is used completely by the selected data range.
- The range marker can be deactivated, then.



Number of Axis Ticks



The number of ticks for the x-axis (for the y-axis as well) can be increased by setting a higher value for "Minimum Number of Ticks" in the Property Browser.





- After setting the scaling back to automatic...
- ...and zooming out via "Show All"...
- ...we have to activate the line marker.

1D Intersection II



Drawing the line marker will create a 1D cross section profile below the 2D view.

1D Intersection III



The horizontal splitter line can be used to change the height ratio of 2D-view and 1D-view by dragging via mouse.

Copy View Settings I

- The view configuration of one diagram can be transferred easily to another one.
- While the diagram the settings shall be copied to is activated, "View > Copy View Settings" has to be called.





Copy View Settings II

- After selecting the diagram the settings shall be copied from,...
- ...the view configuration is tranferred automatically.





Changing to 3D View Mode

Starting from the standard view parameters as used after loading the 2D sample diagram, the 2D view mode can be called by switching from "Diagram in 2D Mode" to "Diagram in 3D Mode".



3D Perspective I





- The diagram size can be changed just as described <u>before</u>.
- Entering some Camera Rotation Angles will change the perspective. (This can be achieved by just clicking and dragging inside the diagram as well.)

3D Perspective II



\checkmark



Setting the Camera Distance Parameter to a large value will make the axes parallel.

Texture



Changing the Zone Method from ,Cells' to ,Contours' improves the smoothness of the surface.





Emphasizing Contours I



In order to emphasize contours in the plot, the Color Lookup Table should be changed.



Emphasizing Contours II

~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~
Camera Direction	Custom Perspective
Camera Distance Parameter	<b>500</b>
Camera Rotation Angle X	<b>70</b> \$
Camera Rotation Angle Y	<u>د</u> ک
Camera Rotation Angle 7	160
Draw Contours	True
Font Size Factor	1 5
Show Data White wastim	~~ue

#### $\checkmark$



# Now the contour borders can be highlighted as well.

#### Font Size inside the 3D View



#### $\checkmark$



A special ,Font Size Factor' can be used to get diagram labels which are better readable.