



INTRODUCTION

All scalar and vector variables have an associated color palette that defines the mapping from variable values to colors. These palettes can be easily edited to customize the mapping. Color palettes can also be saved to disk and restored during a subsequent session.

BASIC OPERATION

Color Palettes have five basic components:

- Levels** A palette can have up to 21 Levels at which the variable value is specified. Note that the number of Levels also controls the number of contour loops created for **contour parts** that depend on the variable.
- Scale** The palette scale controls how variable values are assigned to Levels between the minimum and maximum. Choices are linear (the default), quadratic (x^2), or logarithmic (\log_{10}).
- Type** The palette type controls how color is interpolated across part elements and from Level to Level:
 - Continuous:* Color is linearly interpolated across elements.
 - Banded:* Geometry is colored in discrete bands of uniform color where the band boundaries are permitted to cross element faces (as controlled by the nodal variable values).
 - Constant:* Each element is colored by the color of the first node of the element.
- Limit Fringes** Limit Fringes controls how color is set for nodes outside the range of variable values specified by the palette:
 - No:* Nodes above the range are colored by the maximum color; those below by the minimum color.
 - By Model Color:* Nodes outside the range are colored by the underlying part color.
 - By Invisible:* Elements whose nodes are outside the range are not displayed at all.
- Display Undefined** Controls how coloring is set when the variable value for nodes / elements are undefined:
 - By Part Color:* Color the element by the part color.
 - By Invisible:* Do not display the element.

The default color palette created for each variable has five Levels (with the minimum and maximum set to the range of the variable at the time step selected when the variable was activated), a linear scale, and is of type Continuous. The color ramp is a standard spectrum with the five Levels set to (from min to max) blue, cyan, green, yellow, and red.

EnSight can display multiple color legends in the Graphics Window:



1. Click the Legend... button on the desktop.

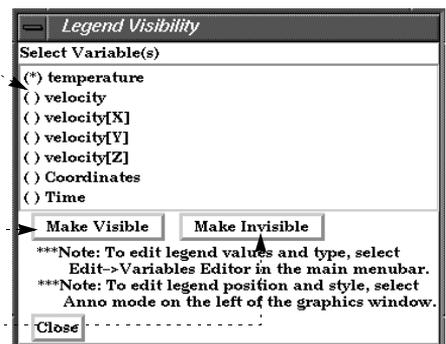
2. Select the desired variable(s) in the list.

For vector variables, you can select magnitude and/or any of the components.

3. Click the Make Visible button.

To remove a legend:

Repeat 1. and 2. above, then click the Make Invisible button.



Color legends have a number of display attributes including size, position, and how/where the variable labels are formatted. See [How To Create Color Legends](#) for details.



The **Feature Detail Editor for Variables** provides access to all aspects of variables. The following shows the components of the dialog in Advanced Interface mode:

1. Double-click the Color icon in the Feature Icon bar to open the Feature Detail Editor for Variables.



Use the File menu to save and restore palettes.

Available variable list. A * indicates that the variable is currently active. Selected variable is highlighted.

Variable type (constant, scalar, vector).

Whether given (Gvn) or computed (Cmp).

Buttons to activate and deactivate selected variables.

Histogram of the distribution of the selected variable. Provides control for:

Minimum Palette Value Slider.
Histogram Scale Adjustment

Select component of vector variables

Maximum Palette Value Slider

Overall min/max for the selected variable.

Calculate overall min/max from Beg to End time steps (and update histogram)

Palette type (Continuous, Banded, Constant)

Palette scale (Linear, Quadratic, Logarithmic)

Limit Fringes toggle

Display Undefined Regions (By Part Color or Invisible)

Number of Levels in the palette

Current Edit Level

Automatic Level interpolation toggle

Variable value assigned to current Edit Level

RGB color assigned to current Edit Level

Color palette – click on a label to set the current Edit Level

Swap the colors from top to bottom



Changing Color Palettes - Basic Operation:

1. Double-click the Color icon in the Feature Icon bar to open the Feature Detail Editor for Variables (or double-click the desired variable in the Main Variables list).



By default, the changes you make to a color palette have an immediate effect. For large models, the response rate for interactive editing (e.g. changing the minimum by moving the Minimum Palette Value slider in the histogram) can be too slow. To disable this behavior, select Edit > Immediate Modification (in the Feature Detail Editor) to toggle this setting off. To apply your changes, click the Apply Changes button at the bottom of the dialog.

2. Select the desired variable. Click Activate if it has not been activated.

Available Variable	Type	Result
temperature	(*) Gvn(N)	Scalar
velocity	() Gvn(N)	Vector
Coordinates	(*) Gvn	Vector
Time	(*) Gvn	Scalar

3. Select Simple Interface

4. Grab the Minimum (or Maximum) Palette Value slider (the white vertical bars) and adjust to the desired location.

5. Enter new Minimum (or Maximum).

6. Enter new number of levels(2 to 21)

7. Select a new palette and click Restore

8. Select the palette and click Undo Restore

To change the minimum or maximum:

To change the number of levels:

To change the colors associated with the values:

To undo changes from a palette:

To undo changes from a palette:

To undo changes from a palette:





ADVANCED USAGE

1. Double-click the Color icon in the Feature Icon bar to open the Feature Detail Editor for Variables (or double-click the desired variable in the Main Variables list).



By default, the changes you make to a color palette have an immediate effect. For large models, the response rate for interactive editing (e.g. changing the minimum by moving the Minimum Palette Value slider in the histogram) can be too slow. To disable this behavior, select Edit > Immediate Modification (in the Feature Detail Editor) to toggle this setting off. To apply your changes, click the Apply Changes button at the bottom of the dialog.

2. Select Advanced Interface

There are several ways to edit a color map.

3. Select the desired variable. Click Activate if it has not been activated.

To change the minimum or maximum (and have the intermediate Levels adjust accordingly):

4. Grab the Minimum (or Maximum) Palette Value slider (the white vertical bars) and adjust to the desired location.

To change the number of Levels:

4. Enter the desired value (between 2 and 21) in the # of Levels field and press return.

Note that this will also change the number of contour loops for any current contour parts that depend on the selected variable.

To edit individual Levels:

4. Select the desired Level: either click on the Level label, OR enter the Level number into the Edit Level field and press return.

5. If you wish to automatically interpolate the variable values at preceding (lower) Levels, toggle on Interpolate to Level and enter the desired Level to interpolate to.

6. To change the variable value associated with the Level, enter the new value in the Value field and press return.

7. To change the color associated with the Level, enter the new color in the RGB fields OR click Mix... to open a Color Selector.

Available Variable	Type	Result
temperature	(*) Gvn(N)	Scalar
velocity	() Gvn(N)	Vector
Coordinates	(*) Gvn	Vector
Time	(*) Gvn	Scalar

Buttons: Activate, Activate All, Deactivate, Extended CFD Variables...

Simple Interface | **Advanced Interface**

◆ Magnitude ◆ X ◆ Y ◆ Z

Min=0.0000e+00 Max=4.8192e+01

Over Time Step Beg 0 End 0

4.8192e+01 Type Continuous

3.6144e+01 Scale Linear

2.4096e+01 Limit Fringes No

1.2048e+01 Display Undefined By Part Color

0.0000e+00 # of Levels 5

Edit Level 1

Interpolate To Level 1

Value 0.0000e+00

R 0.00 G 0.00 B 1.00

Mix...

Flip Colors

Legend Display Attributes...

Close Apply Changes



OTHER NOTES

When a variable is first activated, the minimum/maximum settings for the associated palette are set to the minimum/maximum values of the variable. Although this is the standard way of initializing color maps, it can result in under utilization of the palette since typically only one node has the minimum or maximum value. You can override this default behavior by using the option `-range10` when you start EnSight. This will shrink the palette towards the median value by 10% off the top and the bottom. In previous releases of EnSight this was the default behavior.

SEE ALSO

[How To Create Color Legends](#), [How To Create New Variables](#), [How To Create Contours](#)

User Manual: [Variable Summary & Palette](#) and [Palette File Formats](#)