



SightLine

APPLICATIONS

EAN-False Color

PN: EAN-False-Color

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The following notifications are used throughout the document to help identify important safety and setup information to the user:

 **CAUTION:** Alerts to a potential hazard that may result in personal injury, or an unsafe practice that causes damage to the equipment if not avoided.

 **IMPORTANT:** Identifies crucial information that is important to setup and configuration procedures.

 *Used to emphasize points or reminds the user of something. Supplementary information that aids in the use or understanding of the equipment or subject that is not critical to system use.*



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1 Overview

Using false color during video processing can help visually interpret and analyze video data in different ways. The best example is with a thermal imager, coloring hot objects in red and cold objects in blue for an intuitive presentation. Applying false color to grayscale video, such as from a thermal camera, when using the Blending feature in the 3000-OEM, can help users differentiate between the source of the data they are seeing in the blended image.

1.1 Additional Support Documentation

Additional Engineering Application Notes (EANs) can be found on the [Documentation](#) page of the SightLine Applications website.

The [Panel Plus User Guide](#) provides a complete overview of settings and dialog windows located in the Help menu of the Panel Plus application.

The Interface Command and Control ([IDD](#)) describes the native communications protocol used by the SightLine Applications product line. The IDD is also available as a PDF download on the [Documentation](#) page under Software Support Documentation.

1.2 SightLine Software Requirements

ⓘ IMPORTANT: The Panel Plus software version should match the firmware version running on the board. Firmware and Panel Plus software versions are available on the [Software Download](#) page.

1.3 Application Bit Requirements

The functions described in this EAN require Application Bits (app bits) purchased from SightLine. App bits are enabled with a license file provided by SightLine at initial unit purchase or during a license upgrade process. License files use a hardware ID that is applicable to a specific hardware serial number. For questions and upgrade support contact [Sales](#).

Table 1: Application Bits Requirement Table


Function	Initial Software Release	Required Application Bit(s) v7 License
False Color	2.22.xx	False color is part of SightLine's foundation software. Optional/recommended: Enhancement 0x0000 0080/High Bit Depth 0x0002 0000



2 False Color Guidelines

The value of false color added to thermal imagery can be subjective in certain scene situations. It is helpful to have two to three options that work best in most user case thermal imaging scenarios.

Find color patterns that allow objects of interest to be easily discerned using color.

 *Require some experimentation with different colors and imagery.*

False color can also be used in Electro-Optical (EO) imaging for detecting over exposure (saturation). For example, using the user defined color palette, a pattern can be defined that turns red with pixel values at 90% of the full saturation ($255 * 0.90 = 229$) allowing some flexibility to handle events that might be too bright or too dark.



Figure 1: False Color Image Example

2.1 Frequently Used Modes

White Hot / Black hot:	Imagery produced by a thermal camera where white is hot and black is cold or white is cold and black is hot.
Iron256:	Black is cold, violet and blue are warmer, progressing to reds and yellows, white being the hottest.
Ice / Fire:	Used to detect saturation points at either end of the intensity scale. 0 = blue = very cold things, 255 = red = hot things.
Jet/HotHSV/470CLR/Color1:	Provide a continuous spectrum of color.

3 Related SightLine Commands

Set Display Parameters (0x16):	Allows user to choose 1 of many predefined false color palettes.
Set User Palette (0x72):	Allow users to define their own Y, U, V values for a custom false color palette.
Set Moving Target Indication Parameters (0x2D):	Histogram detection (temperature) for moving targets.
Tracking Box Pixel Stats (0x78):	Periodic report of pixel statistics within track boxes.
Set Video Enhancement Parameters (0x21):	Different techniques to improve the contrast and defined edges in the video.



4 False Color Palettes

The *False Color* palette pull down menu (Figure 2), can be accessed from the *Video* tab in Panel Plus. From this menu various color palettes can be selected. An example of each color palette is shown below.

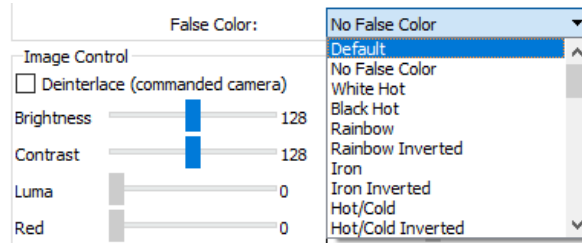


Figure 2: False Color Palette Menu

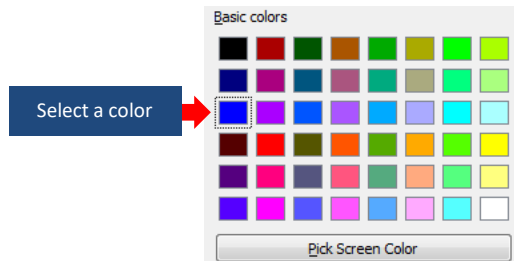
Palette Description	Palette Color Range
White Hot	
Black Hot	
Rainbow	
IRON	
Hot/Cold	
Jet	
Hot & HSV	
470CLR_S & Color 2	
Color 1	
Color 3 & IDDef	
HotIron	
IceFire	
Iron256	
Rain256	
Xvolcano	
Red	
Green	
Blue	



4.1 Custom Color User Palette

To create a custom false color palette:

1. From the main menu in Panel Plus go to *Configure » User Palette*.
2. Select a color. (Blue is used in this example.)



3. Set a range of grayscale values. (For this example, 0 to 40 is used). Click *Apply*. The updated color scheme is shown in the *Current Palette* window.

From: To:



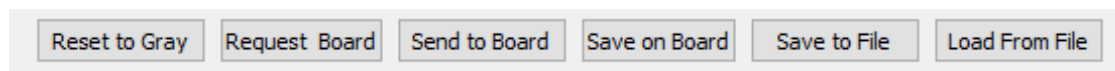
New colors can be set anywhere along the grayscale using the grayscale values from 0 to 255 (max). 0 starts the new color at the darker side of the grayscale. In this example the blue color has a gray scale value of 0 to 40.

4. Select another color (red is used in this example). Set the grayscale value to 230 to 255. This puts the color at the lighter end on the grayscale color range. Click *Apply*.

From: To:



5. If no other adjustments are needed, click *Send to Board* to upload the new user palette. To start over click *Reset to Gray*.





6. To view the custom user palette applied to the video image, select *User Palette* in the *False Color* menu.

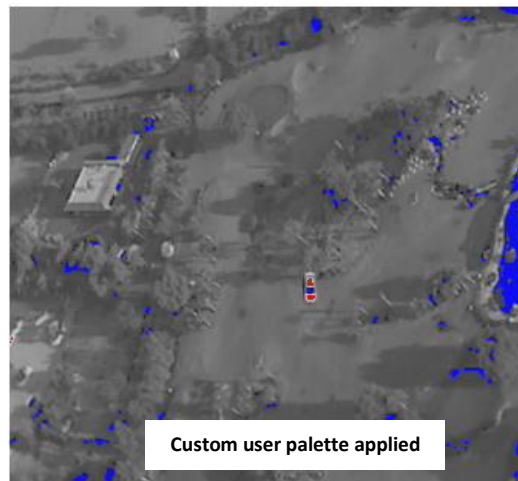
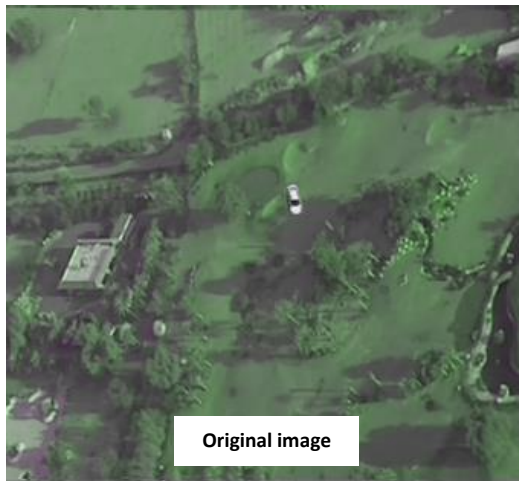
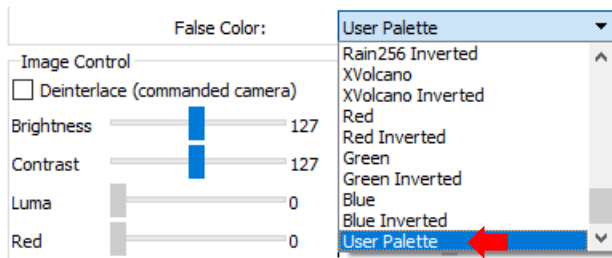


Figure 3: Custom User Palette

4.2 Multiple Color Range Example

Multiple color ranges can also be defined in the user palette as shown in [Figure 4](#).

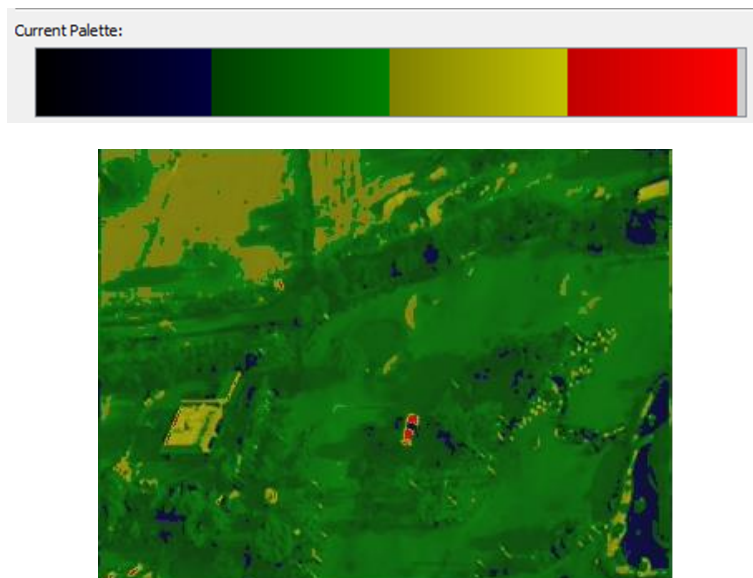



Figure 4: Custom Multiple Color User Palette



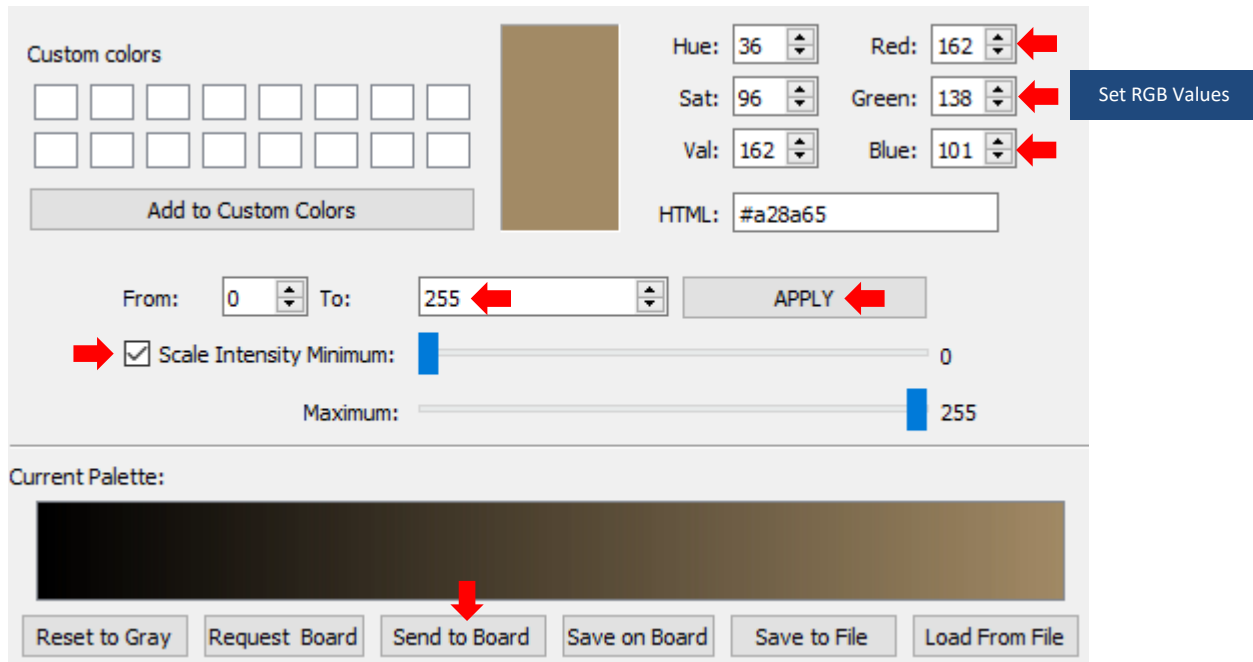
4.3 Sepia Tone Example

To apply a Sepia tone to an image:

1. Set the *Red*, *Green* and *Blue* values as shown.
2. Set the gray scale value to 0 to 255.

 To automatically generate shades of the selected color, use the *Scale Intensity* option.

3. Click *Apply*, and then *Send to Board*.



Custom colors

Hue: 36 Red: 162
Sat: 96 Green: 138
Val: 162 Blue: 101
HTML: #a28a65

From: 0 To: 255 APPLY
 Scale Intensity Minimum: 0
Maximum: 255

Current Palette:

Reset to Gray Request Board **Send to Board** Save on Board Save to File Load From File

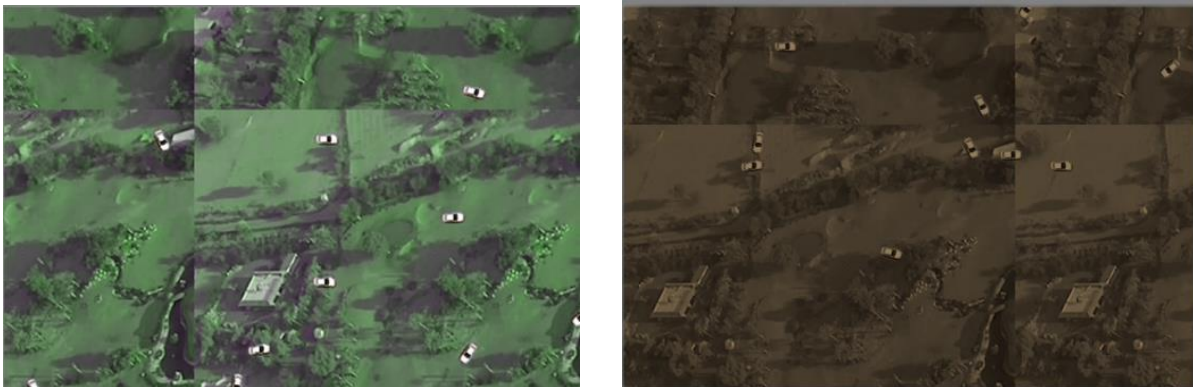


Figure 5: Sepia Tone Custom User Palette Applied



5 Questions and Additional Support

For questions and additional support, please contact [Technical Support](#). Additional support documentation and Engineering Application Notes (EANs) can be found on the [Documentation](#) page of the SightLine Applications website.