Overlay Graphics

PN: EAN-Overlay-Graphics

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Alerts

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.*

Contents

List of Figures

1   Overview

This document gives an overview of the capabilities, related SightLine protocol commands and other related information for the following types of graphical overlays supported by the SightLine video processors:

- Basic overlay objects - lines, circles, rectangles, and text.
- Data overlays on the screen that originate from KLV data associated with the frame.
- Overlay objects that are a result of tracking, detection or other algorithms.
- Graphical logo or splash screen.
- User designed overlays using a DLL.

1.1 Associated Documents

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.

Panel Plus User Guide: A complete overview of settings and dialog windows located in the Help menu of the Panel Plus application.

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.

2   Related Commands

Set Overlay Mode (0x06)	Enable or disable certain overlay graphics.
Current Overlay Mode (0x042)	Current overlay graphics. Same format as Set Overlay Mode.
Current OverlayObject IDs (0x68)	Get status of objects by ID.
Current Overlay Object Parameters (0x6B)	Details of graphic object by ID.
Draw Object (0x3B)	Create / delete overlay graphic objects. Each object is assigned an ID.
Draw Overlay (0x9C)	Create / delete overlay graphic objects, allows user to specify camera index as well as exact length of string.
Logo Parameters(0x9B)	

📄 *Digital zoom, rotation, etc. as set by Set Display Parameters (0x16) are applied before overlays are drawn.*

3   Basic Overlay Objects

This section covers basic lines, circles, rectangles, and text overlay objects. Up to 128 graphical objects can be added to an image. Prior to version 3.1 only 64 graphical objects could be added.

Once an overlay object is created it gets a unique ID (with a range of 1 - 199 inclusive) that can be referenced for editing or deleting. Use Panel Plus to design the layout and experiment with combinations of overlay objects.

The following guidelines should be considered when creating basic overlays:

* Painting basic overlay objects uses processing time. Use less overlays whenever possible.

* Too many overlay objects can clutter the video.

* Place overlay objects on the perimeter of the frame, out of the way of the most useful video information.

* Limit colors. Use black and white whenever possible.

* To make the text more legible use white with a black outline or used black over a light gray (alpha-blended) box or square.

3.1 Overlay Tabs

In Panel Plus, overlay objects can be created from the *Overlays* tab shown in Figure 1.

* Use the *Cursor* checkbox to paint a cursor on the video. The IDD command is **Modify Tracking (0x05)** with the modify mode value of 0.

* Use the appropriate tabs to add lines, boxes, circles, text, KLV based text, crosses, and squares.

* Boxes, squares and circles can be color-filled. The transparency of the object (alpha-blended with the background) can also be controlled.

* The *Cross* overlay object is implemented as two perpendicular lines.

* Click the *Export Objects* button to see the text file that shows the commands required to paint the current objects.

* To save overlay objects and make them persist through restarts, Panel Plus main menu » *Parameters* » *Save to board*.

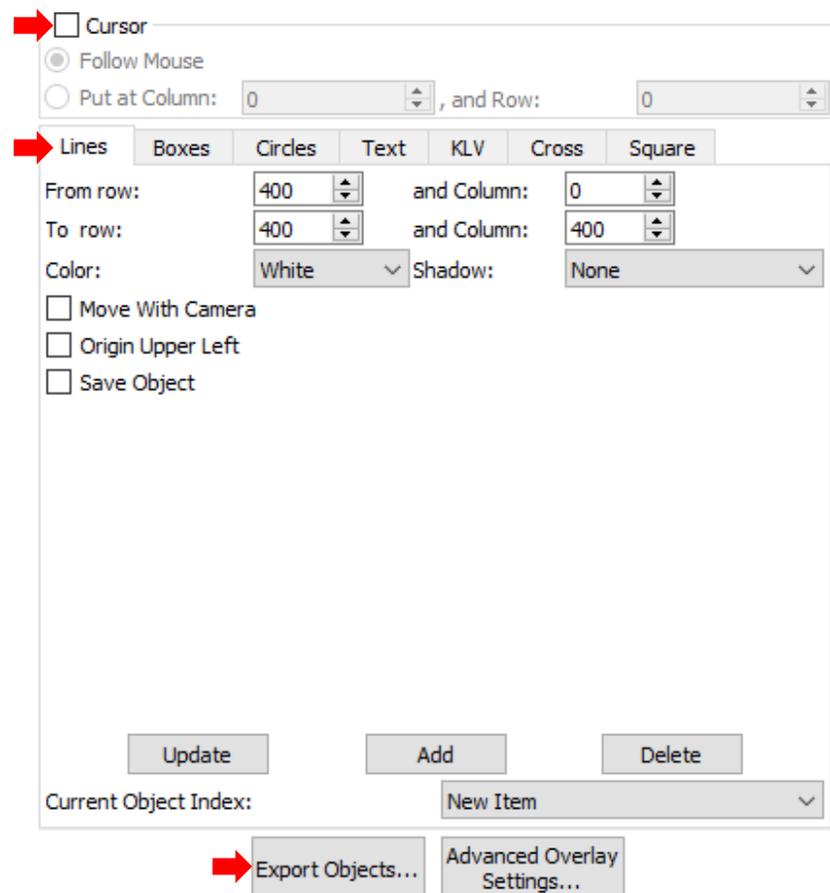📄 *Only objects marked as Save Object are saved.*

Figure 1: Overlays Interface in Panel Plus

Graphical Overlay Notes:

- Export the overlay objects to a simple text file to ease the actual coded implementation.

- Text strings can be up to 64 characters long. Do not include the NULL character at the end of the string.

- All overlay objects created pertain to the active (commanded) camera. It is important to specify the video source (camera ID) that the overlay object will be displayed.

- Each overlay type has a set of parameters. For example, when drawing a line, it is important to know the following information:

  - The row and column pair of coordinates for each of the end points.

  - Color

  - Line shadow (only applicable for horizontal and vertical lines).

  - The frame of reference for the coordinates - top left of the image or center.

- Advanced parameters are used in cases where the camera is moving. Since the video processing board calculates the scene registration, it can put the graphical object at a fixed screen coordinate. Or it can move as the camera moves, leaving the graphical object in the same place in the scene.

- There are a number of fonts that are supported. Some of these fonts support scaling. See the IDD for complete details.

- Users can generate a graphical overlay object with any ID in the 1 - 199 range, but there are only 128 user objects that can be drawn simultaneously.

- Drawing large numbers of graphical objects may result in increased latency and/or dropped frames. The performance graphs can be used to help understand the impact of the graphical objects on processing time. See EAN-Performance-and-Latency for more information.

4   KLV Data Overlays

Use the KLV tab to create an KLV data overlay graphic.

📄 *This document does not include KLV information. To learn more about KLV see EAN-KLV-Metadata.*

KLV Field: Use this dropdown menu to select a KLV data tag to display. Each type of data tag can be displayed with its associated units. For example, *Sensor Altitude* is a numerical value that can be expressed in meters or feet. UTC time is a string that can be displayed in various formats.

Display: Any user-defined text before or after the KLV can be added in this field (up to 64 total characters).

The example in Figure 2 shows how to create a UTC Time overlay graphic. The graphic is formatted as *Time: year-month-day Hours:minutes:seconds*, followed by *UTC*.

The command exported as a text file for this example (assuming the object has an ID of 3) is as follows:

```
DrawObject51,AC,1B,3B,03,01,84,08,01,00,01,00,20,45,00,00,0E,54,69,6D,65,3A,
20,25,73,20,55,54,43,86
```
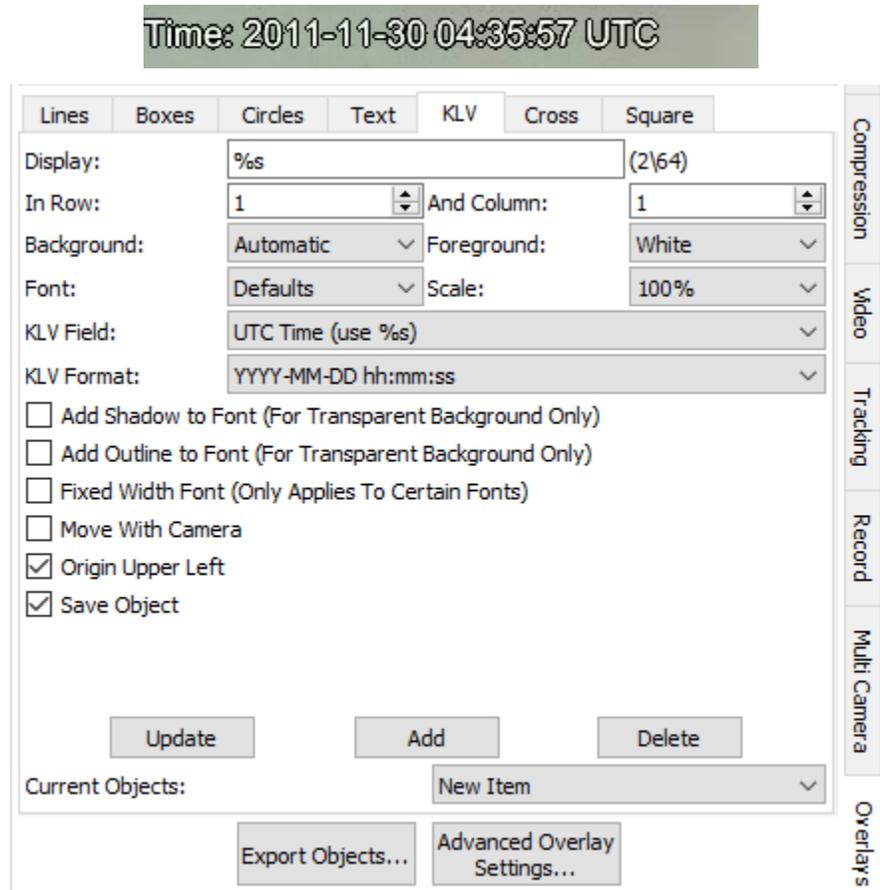
Figure 2: KLV UTC Graphic Overlay Example

5   Tracking, Detection and Related Algorithms Overlays

Some overlay objects are automatically drawn on the screen as a result of SightLine features such as of tracking, detecting and other related algorithms:

📄 *See the IDD and appropriate EANs for more details.*

- Tracking boxes used during Tracking mode - see EAN-Target Tracking

- Ovals for detecting objects - see EAN-Detection Modes

- Focus metric data - see EAN-Lens Focus Control

- Pixel statistics in track boxes - see EAN-Infrared-Temperature

- Landing pattern detection and keep-out zone area - EAN-Landing Aid

- Histogram and other SightLine overlay objects - See EAN-NUC-and-DPR

Advanced control of these graphical objects can be found in the *Overlay Settings* dialog window in Panel Plus (Figure 3). From the Panel Plus main menu » *Configure* » *Overlays*.

📄 *Use the check boxes to show the graphical objects or turn them off.*

📄 *Each video source can have its own set of graphical overlay settings.*

Draw Coasting Track Dashed: Located in the *Configure* section. This feature can be useful during Tracking because it gives the user an indication of when a track is coasting. See [EAN-Target Tracking](#) for more information.
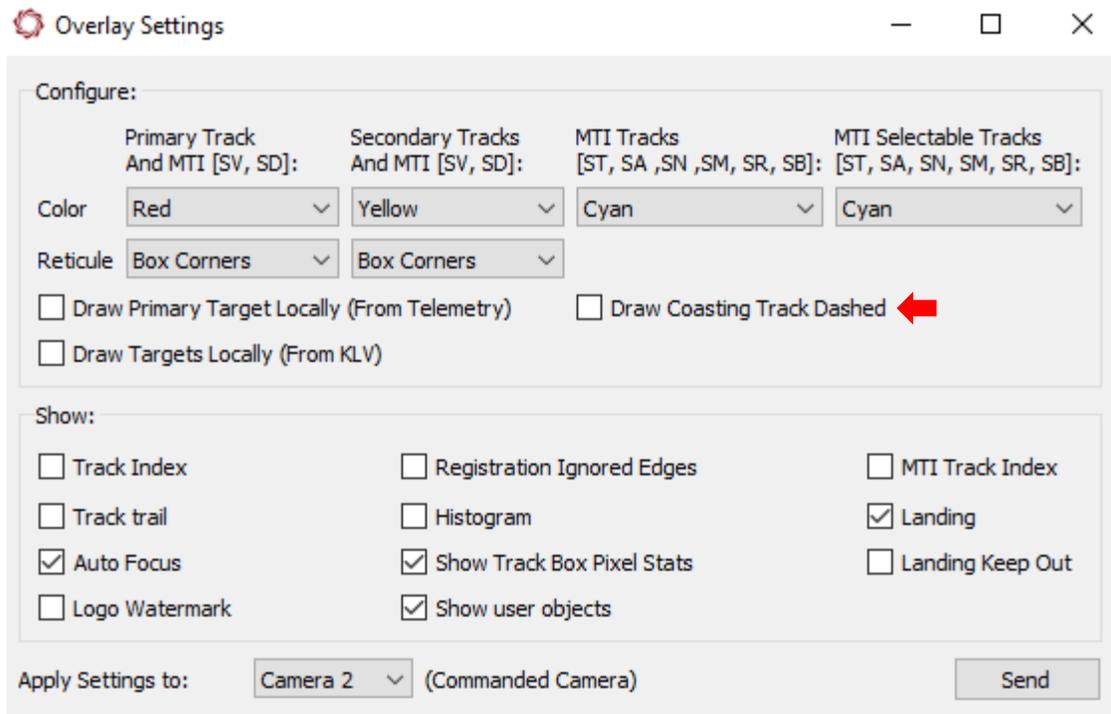

Figure 3: Advanced Overlay Configuration Dialog Window

6 Logo Watermark Overlays

Splash Screen: Used for displaying a splash screen at startup. If the splash JPEG file is present on the unit it will be displayed at startup. It will continue to display until a SightLine command is received by the unit. For example, connecting to the unit with Panel Plus sends the **Get Version Number (0x00)** message and will disable the splash screen.

📄 *If the default camera is not connected, a No Video Source Available message will be displayed instead of the splash screen.*

📄 *The splash screen file has no special parameters associated with it. It is shown on the output video when the SightLine system is powered up until the first command is received by the OEM board.*

User Logo: SightLine supports placement of a customer logo watermark file on the video for branding purposes or some other fixed graphic. The file is stored in the OEM board memory. The watermark image is displayed in the lower right-hand corner of displayed imagery.

Logo creation notes:

- When creating a logo, if it is not 640x150 it will not be downscaled by two.

- The first (top left) pixel in the logo file determines the color to set as transparent in the logo itself.

6.1 Upload User Logo or Splash Screen

The SightLine upgrade utility application can be used to manage the user logo and splash screen files. The following example shows how to upload a splash screen file or a user logo file with the SightLine upgrade utility. For more information on using this application see the EAN-Firmware Upgrade Utility.

The following file types are used for the user logo and splash screen:

- User logo: *userLogo.png*
- Splash screen: *splash.jpg*

1. Place the userLogo.png or splash.jpg in *C:\Users\<username>\AppData\Roaming\SightLine Applications*. The file can also be put in any PC or network directory with writing permissions

2. Use the firmware upgrade application to place the file on the OEM hardware.

📄 *The following command line upgrade utility can be used to copy a watermark logo file from PC to the board:*

```
#> SLAUpgradeCmd.exe –IP 192.168.1.75 –SF "C:/temp/userLogo.png"
userLogo.png
```
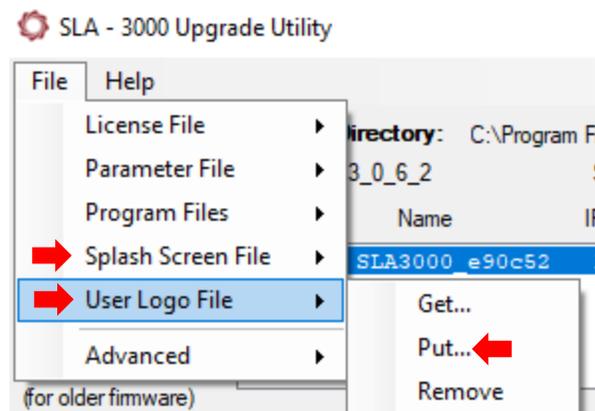

Figure 4: Loading Splash Screen or User Logo File

6.2 Enable User Logo

1. Connect with Panel Plus.
2. Click the *Overlay* tab.
3. Click *Advanced Overlay Settings*.
4. Check the *Logo Watermark* box to enable the logo.
5. In the *Apply Settings to* dropdown menu select the command camera associated with the logo.
6. Click Send.

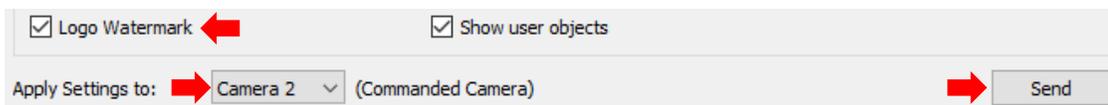📄 *If the user logo fails to send or does not display see the Troubleshooting section.*

Figure 5: Enable User Logo

6.3 Adjust Logo Properties

The user logo is displayed as a fixed watermark aligned with the bottom right corner with specific alpha-blending. To control these parameters, use the *Logo Parameters* dialog window in Panel Plus. From the main menu » *Configure* » *Logo Parameters*.

This dialog window controls how the file is presented on the video. It also controls opacity, relative location, and the camera associated with the overlay.

1. In the *Apply to:* drop down menu select the correct camera.

2. Use the slider to set the opacity of the logo:

    - Zero (0%) = the logo will not be shown

    - 255 (100%) = no background blending

Configure the placement relative to the bottom right corner of the display frame. The offset can be adjusted from the lower right corner of the frame in the columns and rows fields
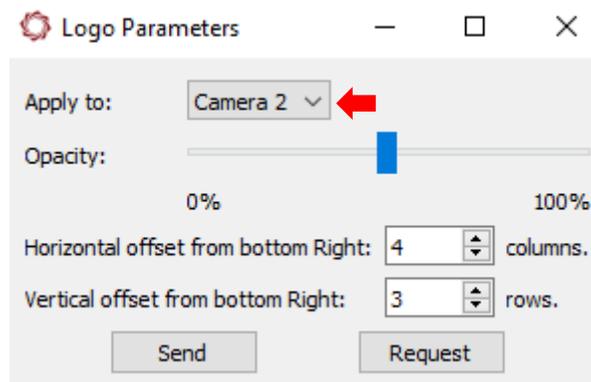

Figure 6: Logo Parameters Dialog Window

7   Using the Overlay DLL

The overlay DLL offers advanced users the option of creating all the graphical overlays independent of SightLine protocol supported objects. See the EAN-ARM Application Development document for more information including a DLL example.

8   Overlay Examples

📄 *Overlays are in Display Coordinates*.

8.1 Drawing Crosses Example

In software version 2.25.04 and above, a cross can be drawn from the *Cross* tab in the *Overlays* tab dialog.
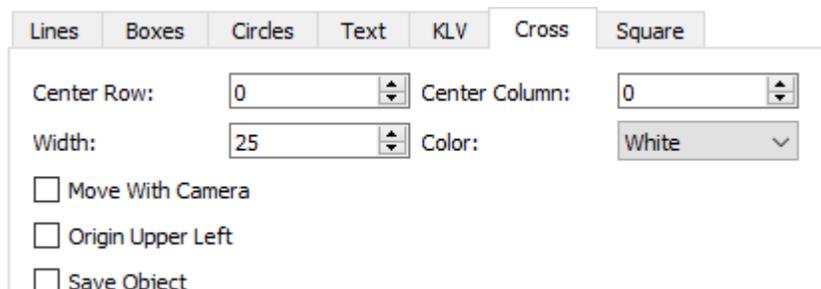

Figure 7: Cross Tab

Legacy software versions 2.24.15 and below:

The example shown in Figure 8 is on a 1500-OEM REV E board with two analog NTSC video cameras. To draw a red cross on analog 0 and a violet cross on analog 2, an overlay graphic must be created individually per camera using a combination of the 0x1f command and the 0x3b command.

1. Create overlay on Camera 0:

   ```
   SetVideoMode 51,AC,10,1F,02,00,00,03,00,00,01,02,01,03,00,00,01,02,81
   ```

2. Draw horizontal line (red):

   ```
   DrawObject 51,AC,0F,3B,01,01,84,02,00,00,F0,00,7F,02,F0,00,BE,9D
   ```

3. Draw vertical line (red):

   ```
   DrawObject 51,AC,0F,3B,02,01,84,02,40,01,00,00,40,01,DF,01,BE,DC
   ```

4. Create overlay on Camera 1:

   ```
   SetVideoMode 51,AC,10,1F,02,00,00,03,01,00,02,03,01,03,01,00,02,03,33
   ```

5. Draw horizontal line (violet):

   ```
   DrawObject 51,AC,0F,3B,04,01,84,02,00,00,F0,00,7F,02,F0,00,EE,4F
   ```

6. Draw vertical line (violet):

   ```
   DrawObject 51,AC,0F,3B,03,01,84,02,40,01,00,00,40,01,DF,01,EE,A0
   ```
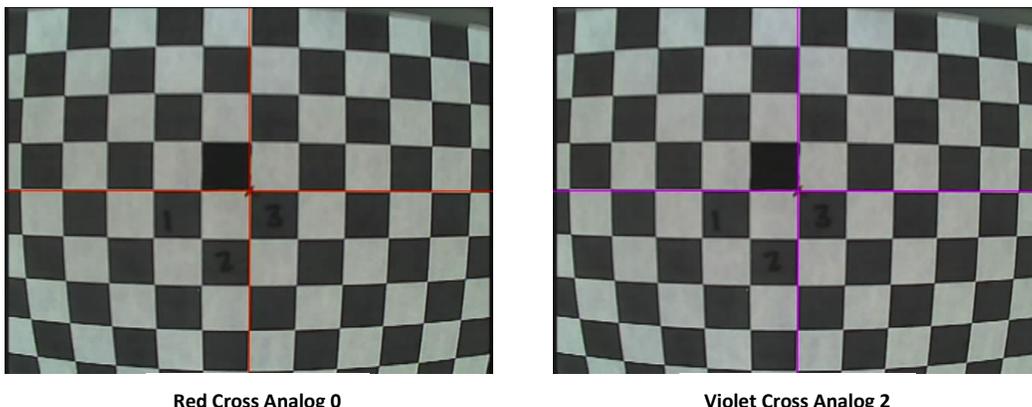

Red Cross Analog 0   **Violet Cross Analog 2**

Figure 8: Drawing Cross Example

📄 *Note the different Object ID for each object. This helps keep track of the different objects in this example. The indexes for the Horizontal Lines (1 and 4) and indexes for the Vertical Lines index (2 and 3) could be the same for both cameras. The system associates the drawing based on the camera order specified in SetVideoMode (0x1f).*

📄 *There are 128 available graphics objects per camera. Adding more graphics can reduce the performance of the system. There is currently no mechanism to draw the same graphic on two displays. Prior to 3.1 only 64 objects were available per camera.*

9 Cooler Countdown

This process describes how to generate a startup splash screen with a countdown text to block video from displaying while an IR camera is cooling down (Figure 9).

User drawn overlays can be used to create a black opaque overlay that can enabled by default at startup. A customer ARM application or other external program can then be used to display countdown text as an overlay.

1. Create a black opaque overlay that covers the entire screen:

   a. Panel Plus » *Overlays* tab » *Boxes* tab.

   b. Set up the example as shown in Figure 10.

   c. Click *Add*.

📄 *The following command creates a black overlay box, 640 x 480 filled:*

DrawObject 51,AC,0F,3B,01,01,84,05,00,00, 00,00, 80,02, E0,01,11,28

📄 *Note Current Objects field. This is box object #1.*

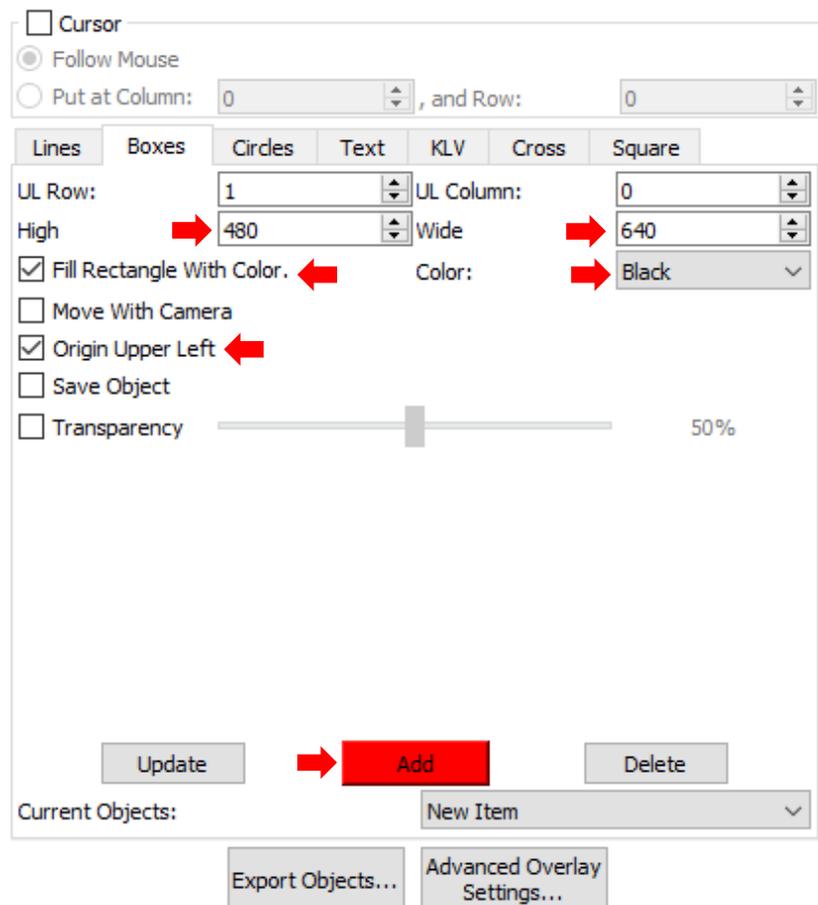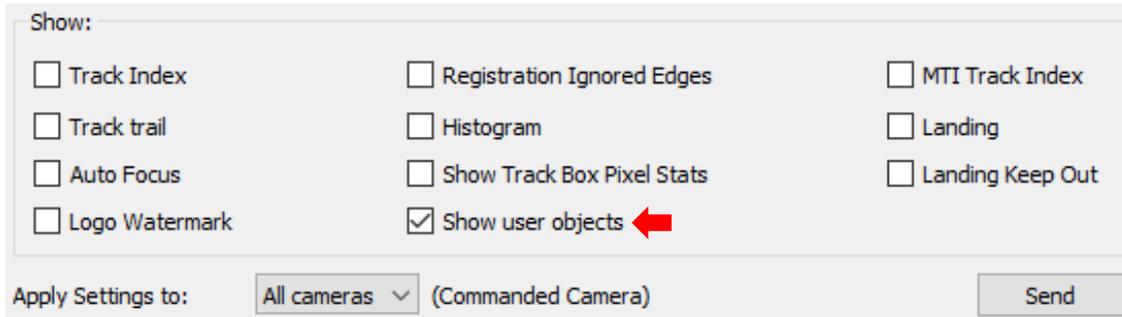**Figure 9: User Drawn Startup Splash Screen Example**

Figure 10: Create Black Opaque Overlay

2. Enable user drawn objects:

    a. Panel Plus main menu » *Configure* » *Overlays*.

    b. Check the *Show user drawn objects* box.

📄 *Enable user drawn objects command: SetOverlayMode 51,AC,08,06,05,07,00,10,0B,0B,40*

3. Set the overlay text:

    a. Click the *Text* tab.

    b. Set up the example as shown in Figure 11.

    c. Click *Add*.

📄 *Set overlay setting text command example: DrawObject 51,AC,22,3B,02,01,84,06,19,00,0A,00,20,20,00,00,10,49,6D,61,67,65,72,20,63,6F,6F,6C, 69,6E,67,20,64,6F,77,6E,7B*
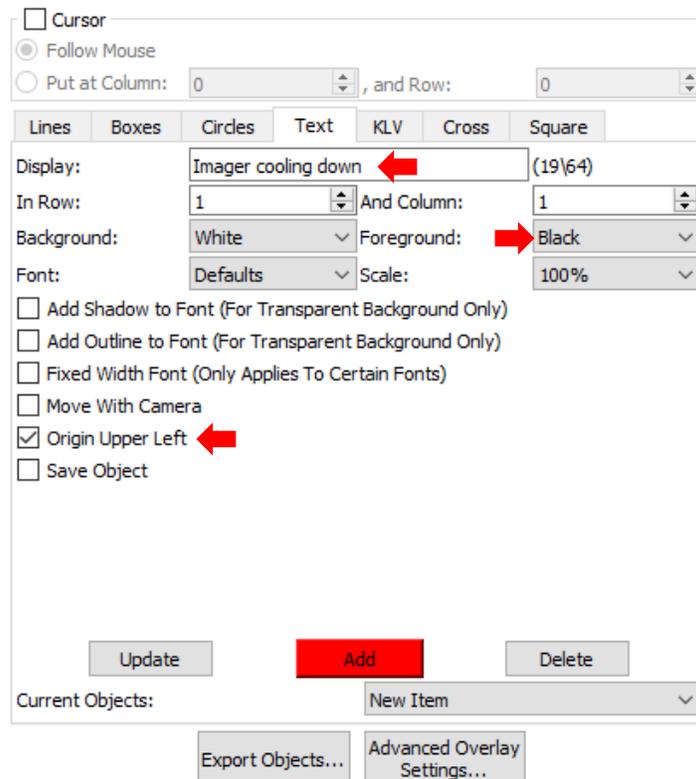

Figure 11: Set Overlay Text

4. Save parameters and reset board. This saves the overlay settings to the parameter file for continual restarts. The ARM or other application writes/updated text to the screen.

5. Once the black overlay is no longer needed, delete the black overlay object by its ID, or uncheck the disable *Show user drawn objects* box in the *Overly Settings* dialog window.

📄 *Do not save the parameters so that it will display correctly on the next startup.*

Commands:

- Delete black overlay object box #1 command:

  DrawObject 51,AC,0F,3B,01,00,84,05,00,00,00,00,00,00,00,11,8F

- Disable display of user objects command:

  SetOverlayMode 51,AC,08,06,05,07,00,00,0B,0B,0A

10 Troubleshooting

10.1 Logo Watermark Overlay Error Message

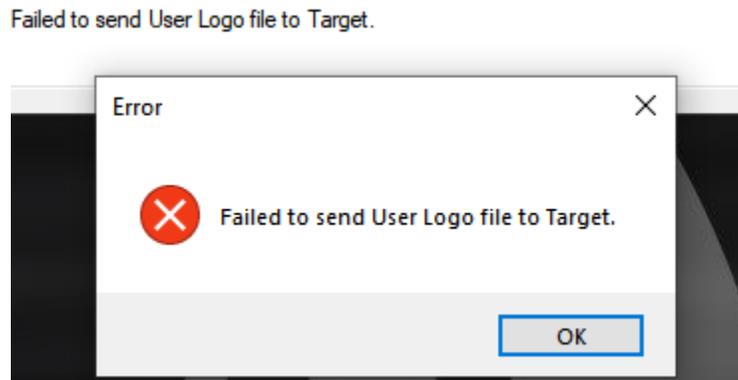Make sure the user logo file name is correct. It should be in a PNG format and labeled *userLogo.png.*

Figure 12: User Logo Error Message

10.2 Logo Watermark Not Displayed

If the logo watermark is not displayed and the file was sent successfully, and the board was restarted try the following steps:

1. Connect to Panel Plus.

2. From the *Overlay* tab click *Advanced Overlay Settings*.

3. Check the *Logo Watermark* box and click *Send*.
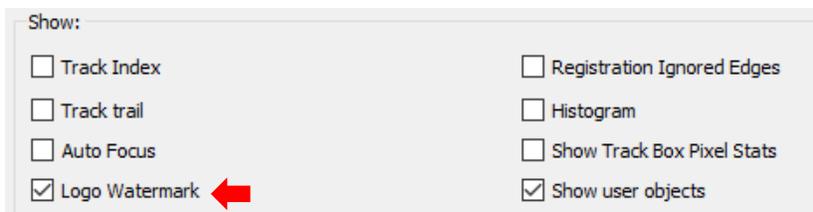
10.3 Questions and Additional Support

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.