SightLine APPLICATIONS

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

List of Tables

1 Overview

SightLine software allows user to create different overlay graphics for on-screen display (OSD). Text, lines, circles etc. can be created to enhance the display for users. User defined logos can also be used to customize the display. This document will cover some basics for using these overlay tools. Other display related topics such as false color and blending are covered in other documents.

1.1 Associated Documents

EAN-Startup Guide 1500-OEM: Describes steps for connecting, configuring, and testing the 1500-OEM video processing board on the 1500-AB accessory board.

EAN-Startup Guide 3000-OEM: Describes steps for connecting, configuring, and testing the 3000-OEM video processing board on the 3000-IO interface board.

EAN-Firmware Upgrade Utility: Outlines the steps for installing and running the Upgrade Utility which can be used to upload user logos to the target system.

Interface Command and Control (IDD): Describes the native communications protocol used by the SightLine Applications product line. The IDD is also available as a local download on the Software Download page.

Panel Plus User Guide: Provides descriptions of all the settings in the Panel Plus application. (Located in the Panel Plus application in the *Help* menu.)

1.2 SightLine Software Requirements

ⓘ **IMPORTANT:** The Panel Plus software version should match the firmware version running on the board.

2 Related Commands

Set Overlay Mode (0x06)	Enable or disable certain overlay graphics.
Draw Object (0x3B)	Create / delete overlay graphic objects. Each object is assigned an ID.
Current Image Size (0x4E)	Used to get the capture frame size and the display frame size.
Set Video Mode (0x1F)	Select current (command) camera on which to attach overlays.
Current Overlay Objects (0x6B)	Current overlay object description by object ID.

Command Notes:

- Digital zoom, rotation, etc. as set by **Set Display Parameters (0x16)** are applied before overlays are drawn.
- Selecting to render relative to the source image or the display image may change the way the graphics are displayed (i.e. position, size relative to the image, etc.) when stabilization is enabled.

- If there are not enough pixels to render the complete graphic, then no part of the graphic will be rendered. For example, if you offset 30 characters to start at (640,0) on an SD image, then no characters will be drawn. This can be complicated when the source image is large, the output image is small, and the origin changes.
- Maximum number of objects drawn on the screen at one time is 64. Maximum text length is 64 characters.
- Different graphics may be applied to each camera index.

2.1 Draw Object (0x3B)

Byte Offset	Description	
2	Packet length = 15 (for non-text objects), variable for text object types (>15)	
3	Packet Type = 0x3B	
4	Unique Object ID (1 to 255), refer to this ID to destroy a created graphic object. ID=0 is used for destroying all objects when Action is Destroy. Maximum number of simultaneous drawn objects is 64.	
5	Action 0 = Destroy 1 = Create If destroy action is specified, then following fields are ignored.	
6	Coordinate Properties	
7	Object Type	
8 - 15	See Bytes 8-15 Interpretation	
16	Color to Number Mapping	
16	Bits 0-3	Background Color
16	Bits 4-7	Foreground Color
17 to N-1	String of characters (text objects only). See String Length	

2.2 Coordinate Properties

Value	Description
0	Reserved
1	Coordinates are specified in source coordinate space. In addition, draw object is moved with camera motion. This mode is useful for overlays such as laser reticles.
2	Coordinates are specified in display coordinate space. In addition, draw object is moved with scene motion. This mode is equivalent to scene mode tracking with a custom overlay.
3	Reserved
4	This mode should be used for static overlays such as text.
5 - 127	Reserved
Bit 7	0 (DEFAULT) - coordinates are with the center of the image at (0, 0). This means that the upper-left corner is at (-display width/2, -display height/2) or (-source width/2, -source height/2) depending on the coordinate mode. 1 - coordinates are specified relative to the with the upper left corner of the image at (0, 0). This means that the center of the image is at (display width/2, display height/2) or (source width/2, source height/2) depending on the coordinate mode.

2.3 Object Type

Value	Description
0	Circle
1	Rectangle
2	Line
3	Text
4	Filled Circle
5	Filled Rectangle
6	Text Extended

2.4 Color to Number Mapping

Value	Description	Value	Description
0	White	8	Light Green
1	Black	9	Green
2	Light Gray	10	Dark Green
3	Gray	11	Red
4	Dark Gray	12	Orange
5	Light Blue	13	Yellow
6	Blue	14	Transparent
7	Dark Blue	15	Automatic

2.5 Background Color

For vertical and horizontal lines, the background color is drawn as a shadow. To disable the shadow, use Transparent (14).

2.6 Foreground Color

Color of the object.

2.7 Bytes 8 - 15 Interpretation

x = column and y = row

	Bytes							
Object Type	8	9	10	11	12	13	14	15
Circle	Center Point X		Center Point Y		Radius		Ignored	
Filled Circle								
Rectangle	Upper Left Corner X		Upper Left Corner Y		Width		Height	
Filled Rectangle								
Line	End Point 1 X		End Point 1 Y		End Point 2 X		End Point 2 Y	
Text	Upper Left X		Upper Left Y		String length		Ignored	
Text Extended	Upper Left X		Upper Left Y		H Scaling	V Scaling	Font ID	Font Spacing
KLV								

2.8 String Length

Length of the text string. Currently the characters supported are: a-z, A-Z, 0-9. Carriage return, linefeed and other ASCII characters may not be supported. It is not necessary to send a NULL character ('\0' or 0x00) to terminate the string.

Maximum length of string is 64 characters.

2.9 H Scaling

Horizontal scale shifted left 5 (e.g. 32 means no scaling. 0 is interpreted as no scaling).

2.10 V Scaling

Vertical scale shifted left 5.

2.11 Font ID (Bits 0 - 4)

Value	Description
0	Courier
1	Courier Bold
2-4	Reserved
5	Arial
6	Arial Bold
7	Verdana
8	Verdana Bold
9	Calibri
10	Calibri Bold

Figure 1: Example Font Display

2.12 Bits 5 - 7

Bit	Description	
5	Enable fixed width. Applicable to fonts ID 5 and higher.	
6	Enable outline effect. Applicable when Background Color is set to Transparent.	
7	Enable shadow Effect. Applicable when Background Color is set to Transparent.	

2.13 Example Using Shadow and Outline

Verdana

Add Outline

Add Shadow

DrawObject 51,AC,14,3B,01,01,C4,06,01,00,01,00,20,20,**07**,00,0E,41,42,43,44,45,E3

DrawObject 51,AC,14,3B,02,01,C4,06,01,00,10,00,20,20,**47**,00,0E,41,42,43,44,45,B2

DrawObject 51,AC,14,3B,03,01,C4,06,01,00,20,00,20,20,**87**,00,0E,41,42,43,44,45,68

2.14 Font Spacing

Font spacing is the number of pixels between a font to the next font. If the spacing is 0, then the default spacing is used.

Examples:

DrawObject 51,AC,16,3B,01,01,C4,06,01,00,01,00,20,20,00,00,01,43,6F,75,72,69,65,72,93

DrawObject 51,AC,1B,3B,02,01,C4,06,01,00,10,00,20,20,01,00,01,43,6F,75,72,69,65,72,20,42,6F,6C,64,85

DrawObject 51,AC,14,3B,03,01,C4,06,01,00,19,00,20,20,05,00,01,41,72,69,65,6C,34

DrawObject 51,AC,19,3B,04,01,C4,06,01,00,2A,00,20,20,06,00,01,41,72,69,61,6C,20,42,6F,6C,64,92

DrawObject 51,AC,16,3B,05,01,C4,06,01,00,3C,00,20,20,07,00,01,56,65,72,64,61,6E,61,C2

DrawObject 51,AC,1B,3B,06,01,C4,06,01,00,4E,00,20,20,08,00,01,56,65,72,64,61,6E,61,20,42,6F,6C,64,3E

DrawObject 51,AC,16,3B,07,01,C4,06,01,00,60,00,20,20,09,00,01,43,61,6C,69,62,72,69,0F

DrawObject 51,AC,1B,3B,08,01,C4,06,01,00,72,00,20,20,0A,00,01,43,61,6C,69,62,72,69,20,42,6F,6C,64,8B

DrawObject 51,AC,15,3B,09,01,C4,06,01,00,82,00,20,20,0B,00,01,52,6F,62,6F,74,6F,9D

DrawObject 51,AC,1A,3B,0A,01,C4,06,01,00,94,00,20,20,0C,00,01,52,6F,62,6F,74,6F,20,42,6F,6C,64,A4

3 Advanced Overlay Settings

To enable the advanced overlay features, from the main menu in Panel Plus go to the *Configure* » *Overlays*.

3.1 Auto Focus

Enabling this feature displays a box centered in the middle of the screen. It also displays the *Auto Focus Metric* and *Moving Average*.

Figure 2: Auto Focus Metric

3.2 Track Box Pixel Stats

To use this feature, it must first be enabled in the *Telemetry* section:

1. Select the *Tracking* tab in Panel Plus.
2. Click the *Show Telemetry*. Check the Track Box *Pixel Statistics* box.
3. In the Overlay Settings dialog, check the Show Track Box Pixel Stats.
4. Each track box will now display the mean, min, and max below the respective track box.

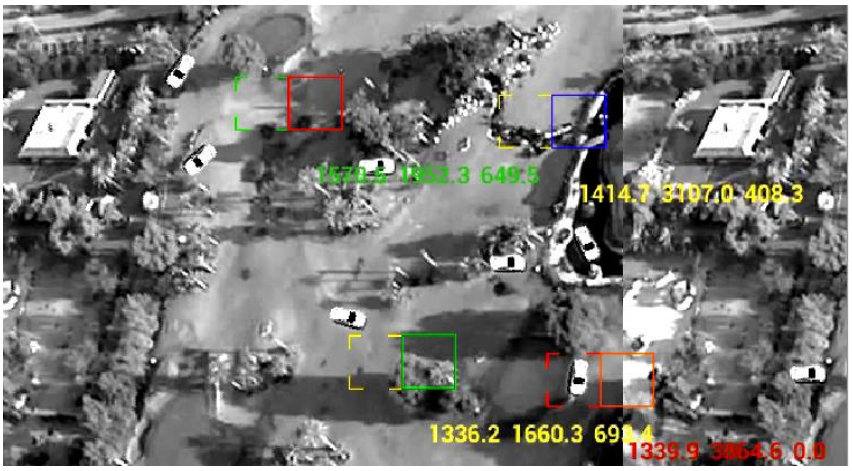

Figure 3: Track Box Pixel Statistics

4 Current Overlay Objects (0x6B)

To view an object id's properties, use the Get Parameters Function (0x28).

Byte Offset	Draw Object (0x3B)	Current Overlay Objects (0x6B)
4	Unique Object ID	Object Type
5	Action	Object ID
6	Coordinate Properties	Move with Camera
7	Object Type	Static Object
8 - 15	Position Properties, etc.	Position Properties, etc.
16	Color To Number Mapping	Color to Number Mapping
17 - N	Text String (optional)	Text String (optional)

5 Code Sample

```
s32 drawTextEx(u8 *buf, u8 id, u32 doFlags, s16 x, s16 y, const char *text,
SL_DRAW_COLOR color,
            SLFONT_TYPE fontId=SLFONT_TYPE_COURIER, f32 xScale=1.0f, f32
yScale=1.0f, u32 fontWidth=0, SL_DRAW_COLOR bg=SL_DRAW_COLOR_TRANSPARENT)
{
  if (color < SL_DRAW_COLOR_WHITE || color > SL_DRAW_COLOR_TRANSPARENT)
    return SLA_FAIL;
  if (id == 0)
    return SLA_FAIL;
  SL_TEXTEX_DRAW_PARAMS par;
  par.col = x;
  par.row = y;
  par.len = strlen(text);
  par.xscale5 = (u8)(xScale * ITO5);
  par.yscale5 = (u8)(yScale * ITO5);
  par.fontId = fontId; //SLFONT_TYPE_COURIER;
  par.fontWidth = fontWidth;
  if (par.len >= sizeof(par.text))
    return SLA_FAIL;
  strcpy(par.text, text);
  s32 byteCnt = SLFIPDrawObject(buf, id, 1, doFlags, <b>SL_DO_TEXT_EX</b>,
&par, bg, color);
  return byteCnt;

}
```

6 Overlay Examples

Drawing Graphics on the 1500-OEM

Firmware: 2.22.34

1500-OEM (REV E)

2 analog video cameras (NTSC)

Overlays are in Display Coordinates.

6.1 Drawing Crosses Example

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.

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

Horizontal Line (Red):

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

Vertical Line (Red):

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

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

Horizontal Line (Violet):

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

Vertical Line (Violet):

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

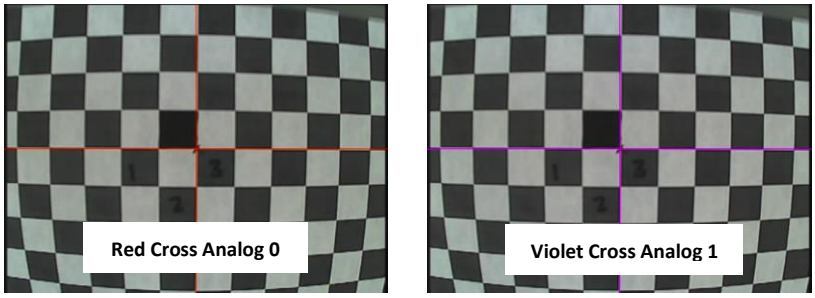

Figure 4: Overlay Graphics Example

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 254 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.

7 Panel Plus

DrawObject 51,AC,18,3B,01,01,82,06,01,00,01,00,20,20,00,00,10,53,49,47,48,54,4C,49,4E,45,8B

Text pans (moves) as camera moves.

0x84

0x80 Upper-left corner

0x04 Display coordinate space

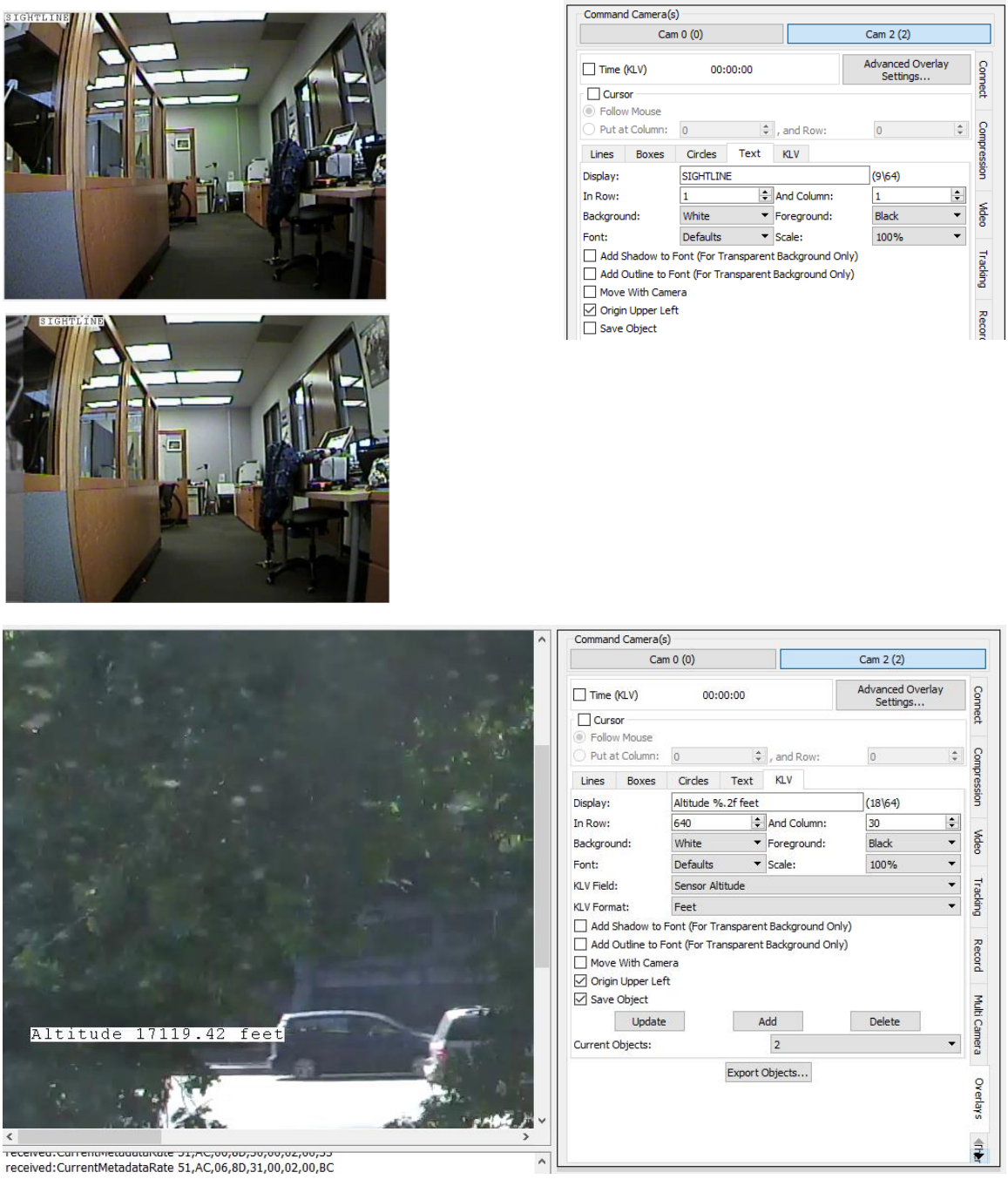

Figure 5: Text Pans as Camera Moves

8 KLV Metadata Timecode Autoincrement

KLV metadata is only transmitted within the network data stream. If the current KLV timecode is displayed on the overlay, it will only be autoincremented by the SightLine code if network video is enabled.

If KLV timecode is sent in metadata and network video is enabled, then the timecode on the display will automatically increment with the system clock. This means it does not need to be constantly updated by the KLV metadata source.

In a system without network video enabled (analog or other output modes) the timecode must be manually updated every second from the KLV metadata source.

9 Logo and Splash Screen

The upgrade utility can be used to upload and manage logo and splash screen files. See the EAN-Firmware Upgrade Utility for more information on how to use this utility to manage these files. File types and definitions are shown in Table 1.

Table 1: Logo and Splash Screen Files

File	File Type	Explanation
User Logo (watermark)	userLogo.png	Used for displaying a watermark image in the lower right-hand corner of displayed imagery.
Splash Screen	splash.jpg	Used for displaying a splash screen at startup.

9.1 User Logo (watermark)

Custom user logos can be created in a file and uploaded to the unit to display in the lower right-hand corner of displayed imagery. A default Sightline logo is currently embedded within the firmware. The custom logo will replace the SightLine logo.

When creating a logo file, size the graphic to fit in the video frame size of the camera that is being used. The software will sample the pixel on the top left corner of the logo. This color becomes the transparent background. In the logo example shown in Figure 6, the upper left corner pixel is black, all black pixels in the image will be transparent when the logo watermark is displayed.

Figure 6: Custom Logo File Example

The logo is aligned to the bottom-right corner of the frame. If it is too large to fit in the frame the software will use the bottom-right part of the logo file.

The file is re-scaled by ½ only if it is 640x150 pixels for backwards compatibility.

To view the logo, open Panel Plus and go to *Configure » Overlays. C*heck the *Logo Watermark* box in the *Overlay Settings* dialog window. The logo will become visible. Use the dropdown menu in *Apply Settings to* for specifying a camera to show the overlay.

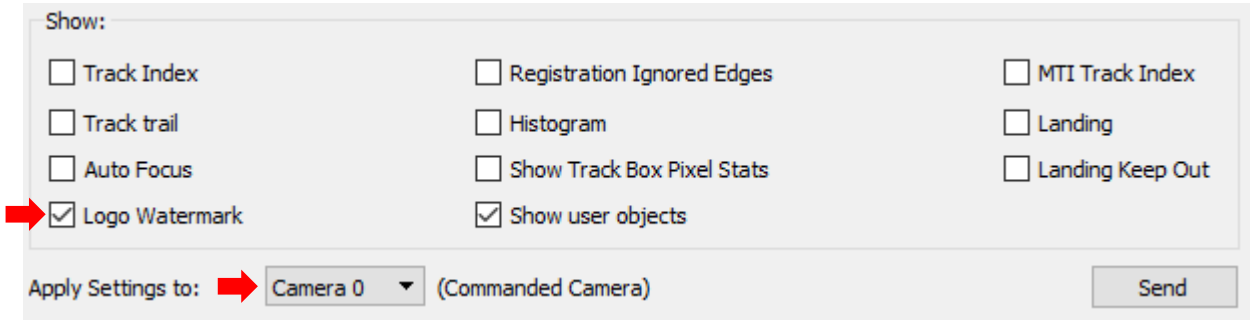

Figure 7: Overlay Settings

The opacity and position of the logo can be controlled from the main menu » *Configure* » *Logo Parameters*.

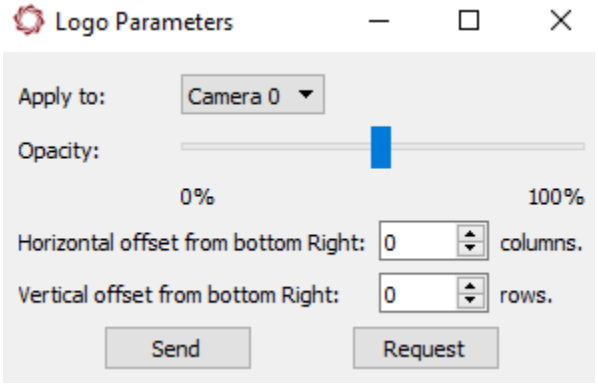

Figure 8: Logo Opacity and Position

This feature can also be enabled using the SightLine Applications Protocol ***SetOverlayMode (0x06)*** *command. Bit-9 of the Graphics Overlay Selection set will enable the display of this overlay. More information can be found in the IDD. The software will down-sample the file to 320 x 75 pixels. If it is not 640X150 it will not be down-sampled by 2.*

9.2 Splash Screen

The user splash screen displays at startup. It will be displayed until the unit receives any Sightline protocol command.

The splash screen is enabled by the splash.jpg file being uploaded into the unit. It is disabled by removing the file.

- The splash image is zoomed to cover the entire video maintaining the aspect ratio, then cropped if needed.
- When creating a splash screen make the aspect ratio the same as the camera (e.g., 16 x 9 ratio for 1280 x 720 camera).
- When using an NTSC camera, use 720 x 480 (or that ratio) for best results.

10 Troubleshooting

10.1 Questions and Additional Support

If you are still having issues and require additional support, please contact Technical Support. Additional support, documentation and Engineering Application Notes (EANs) can be found on the Support pages of the SightLine Applications website.