

EAN-Startup Guide 4100-OEM

2024-07-23

Exports: [Export Summary Sheet](#)

EULA: [End User License Agreement](#)


Web: sightlineapplications.com


Sales: sales@sightlineapplications.com


Support: support@sightlineapplications.com

Phone: +1 (541) 716-5137

1	Overview.....	1	6.2	Stream Network Video to This PC	7
1.1	Additional Support Documentation	1	7	Summary	7
1.2	SightLine Software Requirements	1	7.1	Demo Mode.....	8
2	4100-EVAL Kit	1	8	Modifying Encoder Parameters.....	8
3	4100-OEM Camera Bench Setup	2	9	Troubleshooting	9
4	Network Configuration	3	9.1	Send Diagnostic Files to SightLine Support	10
4.1	Static IP Configuration Through Ethernet	3	9.2	Nonfunctional SLA-4000-MIPI-IN Board (4000-MIPI-IN Kit)	11
5	Serial Communications.....	3	9.3	Pigtail Cable Connections for HD-SDI EVAL Kit Camera	11
5.1	Direct Serial Connection (optional):	4	9.4	Questions and Additional Support	12
5.2	USB Device Driver	4			
6	Panel Plus	4			
6.1	Camera Acquisition.....	6			

 **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 remind the user of something. Supplementary information aids in the use or understanding of the equipment or subject, which is not critical to system use.*



1 Overview

This Startup Guide provides the steps for connecting, configuring, and testing the 4100-OEM. This setup guide assumes the initial use of the EVAL kit only. Customer specific configurations with other camera input boards are fully supported.

1.1 Additional Support Documentation

The Panel Plus User Guide provides a complete overview of settings and dialog windows. It can be accessed from 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. It is also available as a PDF from the [Software Downloads](#) page.

Additional Engineering Application Notes (EANs) and ICDs are available on the [Documentation](#) page.

1.2 SightLine Software Requirements

See the [camera configuration tables](#) for specific OEM Sightline software version requirements for supported cameras.

IMPORTANT: The 4100 platform requires 3.7.x software and above.

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 4100-EVAL Kit

Provides a complete laboratory bench/development interface with standard connectors. For additional options and interface boards, please contact [Sales](#). To review all the interface board options, see the product pages on the SightLine Applications [website](#).

The 4100-OEM will also support a number of USB Webcams and USB 3.0 Vision cameras.

Table 1: 4100-EVAL Kit

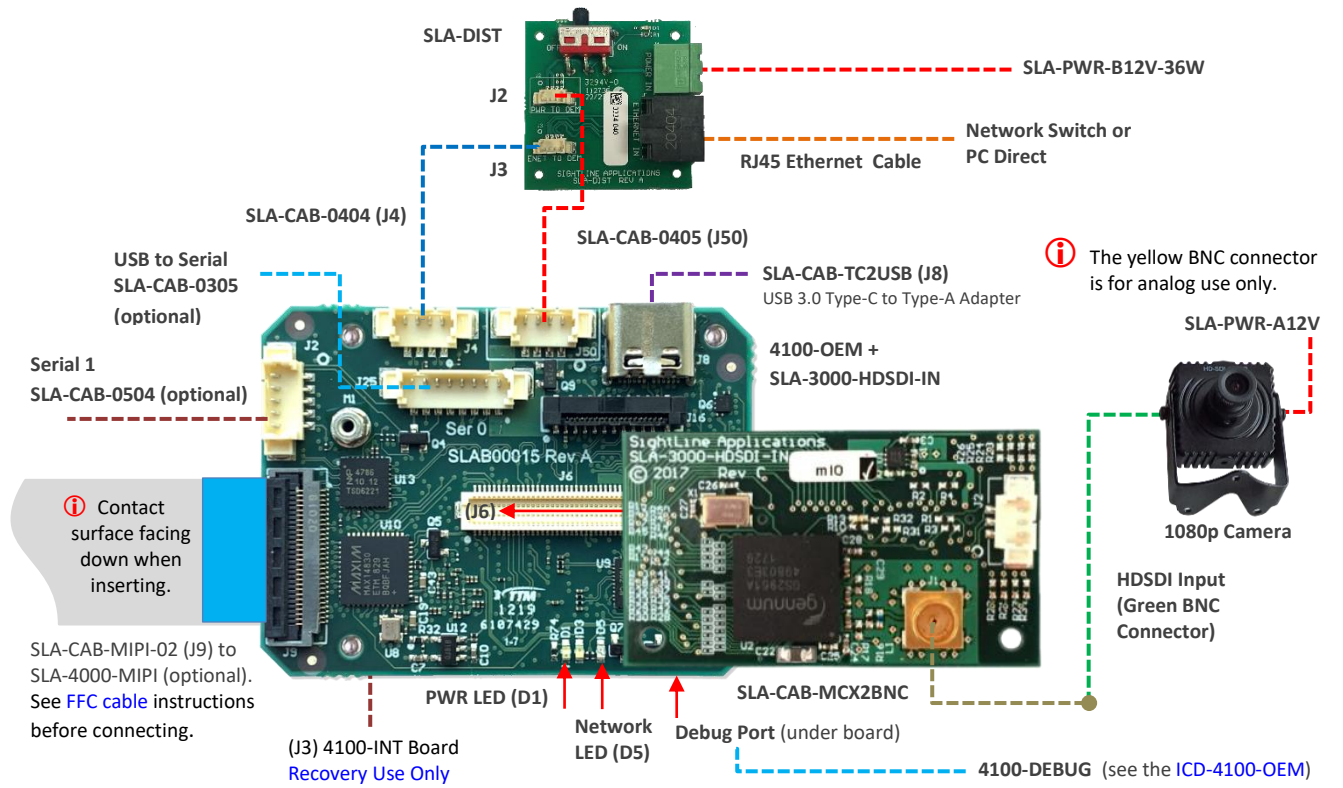
Part Number	Qty	Description	Part Number	Qty	Description
4100-SOM	1	Video Processing Board	SLA-CAB-1505	1	4-pin PicoBlade to pigtail
4000-OEM	1	4000-OEM, PCBA	SLA-PWR-B12V-36W	1	12V Power Supply w/ 2-pin connector (36W) plus AC power cord
4100-OEM	1	4100-OEM, PCBA	SLA-CAB-0504	1	5-pin PicoBlade to 3-pin Molex, and Pigtail
SLA-PAD-080-01	1	Thermal Pad TG-A6200 0.59-inch x 0.59-inch x 0.080-inch	SLA-CAB-0804	1	8P PicoBlade to 3-pin (2) Molex, and Pigtail
SLA-PAD-010-01	1	Thermal Pad 1.4-inch x 1.6-inch x 0.010-inch	SLA-CAB-0305	1	TTL (3.3V) to USB serial cable w/ 3-pin Molex
4000-OEM-MP	1	4000-OEM mounting base	SLA-CAB-0402	1	4-pin Molex to pigtail
4100-BRACKET	1	4100-OEM heat sink bracket	SLA-CAB-TC2USB	1	J8 USB3.0 TYPE-C to Type A
SLA-3000-HDSI-IN	1	HDSI-IN adapter board	SLA-CAB-HD10	1	HDMI cable
SLA-DIST	1	PWR/ENET distribution board	SL00852	1	HDMI adapter, FEMALE
SLA-KIT-4000-DEBUG*	1	4000-DEBUG PCBA kit	SLA-MSD-ADPT	1	SD adapter
SLA-CAB-0405		4-pin Molex-to-Molex PicoBlade, 3.0-inch, PWR (BLK/RED)	SLA-CAB-MCX2BNC	1	Cable, MCX (RA) to BNC(M) for HDSI-IN
SLA-CAB-0404		4-pin Molex-to-Molex PicoBlade, 3.0-inch, GEN (WHT)	SLA-CAM-HDSI	1	HD-SDI 1080p Camera
SLA-MSD-32GB	1	32GB uSD card (installed)	SLA-PWR-A12V	1	12V Power Supply for Camera
SLA-USB-FPC-C	1	PCBA, SLA-USB-FPC-C (recovery use only)	Mounting hardware	-	Spacers and mounting screws
SLA-CAB-USBC-FPC	1	Cables, USB-FPC			

*For 4100-OEM software debugging capabilities see the 4000-DEBUG board in the [ICD-4100-OEM](#). The DEBUG board gives the developer access to a debug serial port at RS-232 level, a USB programming/debugging port, and a switch/button combination for [board recovery](#).



3 4100-OEM Camera Bench Setup

- ⚠ **CAUTION:** To prevent damage to hardware boards, disconnect all input power to OEMs and adapter boards before connecting or disconnecting cables including all FFC, FPC, KEL, HDMI, MIPI, and round wire (Molex) cables.
- ⚠ **CAUTION:** To prevent damage to hardware boards, use a conductive wrist strap attached to a good earth ground. Before picking up an ESD sensitive electronic component, discharge built up static by touching a grounded bare metal surface or approved antistatic mat.



ⓘ A green light (D1) on the 4100-OEM board indicates that all boards are powered on. An amber light (D5) verifies network connection.

- Cables and PWR:**
- ⓘ SLA-CAB-FPC04: 39-position FPC cable, 4.00-inch. See [FPC cable](#) instructions and precautions before connecting.
 - SLA-CAB-0404: Ethernet to OEM 4-pin Molex-to-Molex PicoBlade
 - SLA-CAB-0405: PWR 4-pin Molex-to-Molex PicoBlade
 - SLA-PWR-B12V-36W (110-250VAC input / 12VDC output)
 - SLA-PWR-A12V (110-250VAC input / 12VDC output): PWR to HD-SDI 1080p camera
- 📄 *The SLA-CAB-0305 cable can be used to facilitate a PC/USB connection to serial port 0 on the 4100-OEM. See the [Serial Communications](#) section.*

Interface and Adapter Boards:

- [SLA-DIST](#)
- [SLA-3000-HSDI-IN](#)

📄 *Additional camera adapter boards can be connected using the SLA-4000-MIPI board. See [FFC cable](#) instructions before connecting.*

Recommended Additional Documentation:

- [ICD-4100-OEM](#)
- [ICD-Adapter-Boards](#)
- [4100-OEM](#) and [4100-INT](#) Dimensional Drawings
- [Camera Configuration Tables](#)
- [EAN-SLA-Product-Kits](#)

Figure 1: 4100-OEM Camera Bench Setup



4 Network Configuration

The 4100-OEM Ethernet interface is configured for DHCP at factory default settings. No configuration is necessary to acquire an IP address from a DHCP server. It will self-assign the link-local address of 169.254.1.182/16 if it does not receive a DHCP response.

Refer to [EAN-Network-Configuration](#) for more network configuration information.

SightLine recommends assigning a static IP on the PC when a DHCP server is not present on the network.

If you require additional assistance with assigning a static IP address to the host PC, contact your network administrator or search online for procedures that correspond with your current PC operating system.

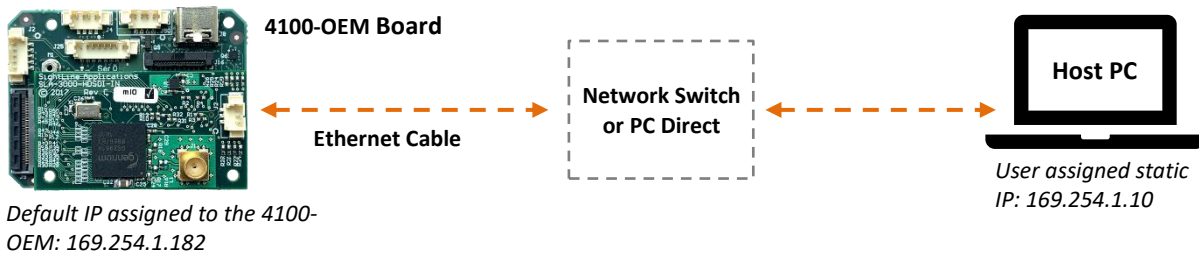


Figure 2: Network Configuration Options

4.1 Static IP Configuration Through Ethernet

1. Connect the board to a DHCP network.
2. Apply power to the 4100-OEM and wait for the board to receive an address from the DHCP server.
3. Connect to the board in Panel Plus.
4. Configure a static IP address using the procedure outlined in [EAN-Network-Configuration](#).

Configuration notes:

- If a wireless adapter is active on the host PC it should be disabled.
- If using the link local address, we recommend assigning a static IP address to the host PC of 169.254.x.x, where (x) is 1-254 (do not use 182). Use a subnet mask of 255.255.0.0.
- Problems with outbound streaming are often related to setting/assigning IP addresses and ports. See the Encoding Configuration settings in [EAN-Encoding](#) for advanced settings.

5 Serial Communications

Use a direct serial connection for troubleshooting or if a network connection cannot be established.

To connect to a PC USB port, attach the USB to TTL (3.3V) serial cable (SLA-CAB-0305) to SLA-CAB-0804 to J25 (Serial 0) on the 4100-OEM board ([Figure 3](#)). Serial ports on the 4100-OEM are 3.3V TTL.

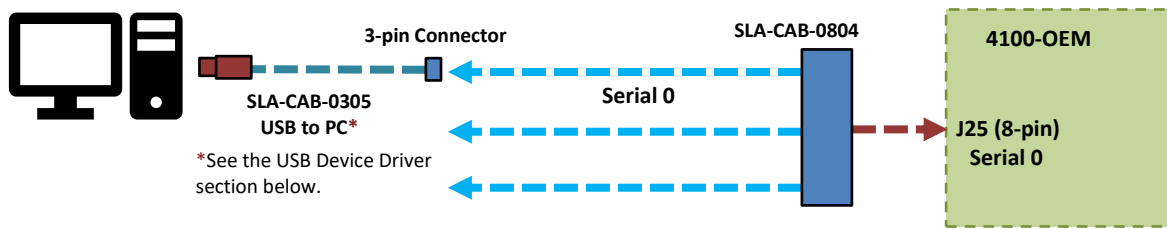


Figure 3: J25 Serial 0 to PC Connection (SLA-CAB-0804)

5.1 Direct Serial Connection (optional):

1. Connect the serial cable to the 4100-OEM board and host PC as show in [Serial Communications](#).
2. From the *Connect* tab, click the *Refresh List* button to get a list of available COM ports.
3. Select the Com port in the drop-down menu.
4. Click the *Disconnected (click to connect)* button.

IMPORTANT: Video cannot be streamed over a serial connection.

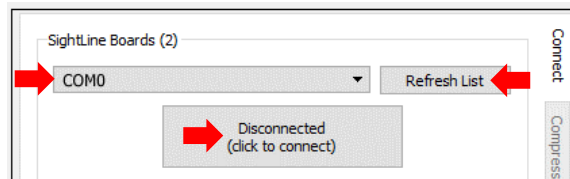


Figure 4: Direct Serial Connection

5.2 USB Device Driver

If the USB connection on SLA-CAB-0305 is not functioning correctly a third-party driver may be needed. The driver can be found on the [Silicon Labs](#) web page » *Downloads* tab » *CP210x Universal Windows Driver*. Once installed open the Run window in Windows (WIN+R) and enter *devmgmt.msc* to open the Device Manager. Verify the new driver is listed under *Ports (COM & LPT)* as shown in [Figure 5](#).

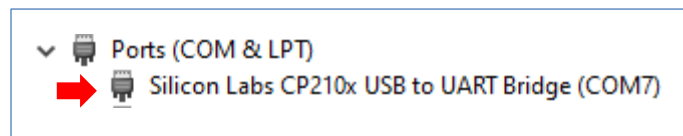


Figure 5: CP210x Universal Windows Driver Installed

6 Panel Plus

This section covers the Panel Plus setup and configuration process. Panel Plus provides a basic graphical interface to the 4100-OEM board.

Before connecting with the Panel Plus software, the 4100-OEM board should be powered up and connected through:

- a network switch or directly to the host PC (preferred) or,
- Direct serial connection (for troubleshooting or if a network connection cannot be established).



1. Go to the [Software Downloads](#) page on the SightLine website and download the Panel Plus application installer. Older releases are available under the *Previous Versions* section.
 - ❗ **IMPORTANT:** The firmware version number and Panel Plus Software version number should match. If the board firmware version is initially unknown, reference the SightLine invoice that came with the board when it was purchased.
 2. Launch the installer file and follow the prompts. After installation, open the Panel Plus application.
 3. The first time that Panel Plus is launched, a Windows Security Alert prompt should appear. Select *Allow Access* to create a firewall exception ([Figure 6](#)).
- Approving private network access is sufficient in most cases. Check public networks if directly connecting to the board.*

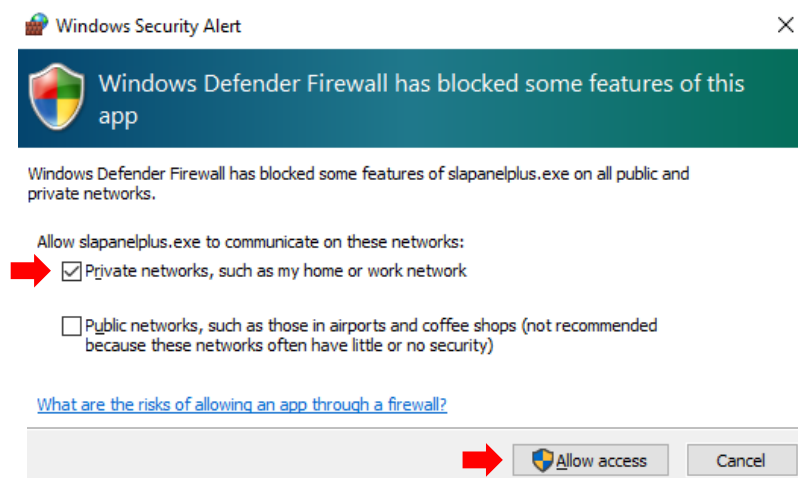


Figure 6: Windows Security Alert Prompt

- ❗ **IMPORTANT:**
 - Do not cancel this prompt. Failure to allow access at this point will not allow the Panel Plus application to connect to the board. See the [Troubleshooting](#) section for more information.
 - Before using the Panel Plus program, review the Panel Plus User Guide in the Help section of the Panel Plus application for additional user and setup information.
4. Network connection to the board:
 - a. From the *Connect* tab, click the *Refresh List* button to get a list of boards on the network.
 - b. Select the appropriate board in the drop-down menu.
 - c. Click the *Disconnected (click to connect)* button.

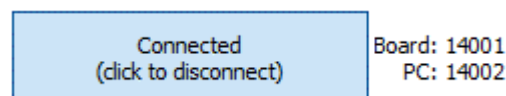


Figure 7: Network Connection to the OEM Board

*Once the connection is successful, the button changes to *Connected*.*



6.1 Camera Acquisition

1. From the main menu go to *Configure » Acquisition Settings*. This dialog window allows changes to the camera configuration.
2. Set the *Camera Index* to *Cam 0*. Set the *Camera Type* to *Generic Digital*.

3. In the *AutoFill* drop-down menu, select *HD-SDI 1080p30* from the Auto Fill menu or enter the *Height* and *Width* settings of the connected camera.

If using a camera that is not configured for 1080p30, choose a corresponding option under Auto Fill that matches the camera, e.g., HD-SDI 720p or HD-SDI 1080p60.

If the camera is listed, the AutoFill drop-down menu automatically populates the relevant fields with the correct settings as shown in *Figure 8*.

Figure 8: Camera Acquisition Auto Fill Settings Example - HD-SDI 1080p30

4. After changes have been made, the *Apply* button will turn red indicating that a change has been detected. Click *Apply* to apply the changes. Close the *Acquisition Settings* dialog window.
5. Save and activate the settings:
 - a. Main menu » *Parameters » Save to Board*.
 - b. Main menu » *Reset » Board*.
 - c. After the system reboots reconnect to the board. Make sure the board connects.

See the [camera configuration tables](#) for all third-party cameras and lens assemblies that are currently supported by SightLine software. Includes configuration and setting support guidance.



6.2 Stream Network Video to This PC

To stream network video to the connected PC, click the *Connection* tab in Panel Plus and then click *Stream Network Video to this PC*.

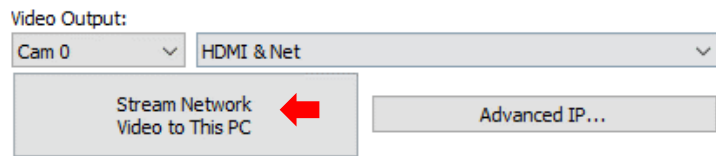


Figure 9: Stream Network Video to PC

7 Summary

This completes the startup guide for the 4100-OEM board. See the Panel Plus User Guide (main menu » *Help* » *User Guide*) for additional user and setup information. If the board has been connected to a camera and encoding functions are part of the configuration, video will be displayed in the main window. On the *Connect* tab of Panel Plus, the purchased/enabled functions are checked. To add additional features to 4100-OEM, contact [Sales](#).

To modify the encoder parameters of the OEM, see the [Modifying Encoder Parameters](#) section.



Figure 10: Panel Plus Connection to Board

ⓘ IMPORTANT: Not all purchased configurations include encoded IP video. For configurations that include encoding, video will be displayed in the Panel Plus main window. Tracker-only configurations will display processed video on the HDMI output only. An HDMI-capable monitor is required for viewing this output



7.1 Demo Mode

SightLine offers a free demo mode for testing non-licensed features. To test and evaluate these features, click the *Demo Mode* button located in the *Connect* tab.

To exit the demo mode power cycle the OEM. The *Demo Mode* screen overlay will continue to display until the *Demo Mode* function is turned off. Certain features are unavailable for testing in *Demo Mode*.

Telemetry outputs are not enabled in Demo Mode.

8 Modifying Encoder Parameters

The encoder parameters can be modified from the *Compress* tab in Panel Plus.

- The H.264 encoding option is a good choice to get started.
- In the *Output Properties* section, use the default values for *Frame Step* and *Down Sample*.
- The *Streaming* parameters section defines the destination IP address and port.
- To set the parameters quickly, click the Use My IP - Unicast button. This sets the outbound destination IP address to the network interface card on the PC.
- Click *Send* to dynamically set the desired IP Address, UDP Port, and UDP delivery format (Unicast, Multicast, or Broadcast).
- To save the settings and make them recurrent through restarts, main menu » *Parameters* » *Save to board*.

See [EAN-Parameter-File](#) for a comprehensive guide to saving parameter settings.

The screenshot displays the 'Compress' configuration window, divided into several sections:

- Network 0** (dropdown menu)
- CODEC / TRANSPORT** section:
 - RTP:** Includes radio buttons for MJPEG, RTP H.264, RTP H.265, RTP MPEG2-TS H.264, and RTP MPEG2-TS H.265.
 - MPEG2-TS:** Includes radio buttons for H.264 (selected, indicated by a red arrow) and H.265, with a 'KLV Only' option.
 - An 'Advanced Compression Settings...' button is located below these options.
- Output Properties** section:
 - Frame Step: 1 (dropdown)
 - Down Sample: None (dropdown)
 - Output Frame Size: Out=In (dropdown)
 - Quality: Slider set to 80
 - Foveal: Slider set to 0
 - Custom Width: 0 (dropdown)
 - Custom Height: 0 (dropdown)
 - H.264 Profile: High (dropdown)
 - Bit Rate: 3.000 [Mbps] (dropdown)
 - I-Frame Interval: 30 [frames] (dropdown)
 - Block Refresh: 0 [blocks] (dropdown)
 - Slice Refresh Size: 0 [rows] (dropdown)
 - Minimum QP: 0 (dropdown)
 - Maximum QP: 0 (dropdown)
 - Deblocking: Filter all edges (dropdown)
 - Bit Rate Control: Variable (dropdown)
 - 'Save Output Settings' button (indicated by a red arrow)
- Streaming** section:
 - To IP Address: 0.0.0.0 (dropdown)
 - Port: 15004 (text input)
 - Use My IP - Unicast (button, indicated by a red arrow)
 - Use Multicast (button)
 - Broadcast (checkbox)
 - Send (button, indicated by a red arrow)
 - Stop Streaming (button)
 - Start/Stop All Nets (checkbox)
 - Export SDP File... (button)
 - Stream RTSP URL (button)

Figure 11: Compress Tab



9 Troubleshooting

Issue: Unable to connect with the Panel Plus application to the 4100-OEM over a standard network connection.

Check static IP address:

Check the static IP address configuration. Improper or unknown static IP address setup is a common connection problem. See the [Network Configuration](#) section and [EAN-Network-Configuration](#) for more network configuration information.

Check network configuration:

After communications have been established using the serial connection, networking settings can be corrected to allow proper network communications.

1. From the main menu, go to *Configure » Network Settings*.
2. If an unknown static IP address is assigned, remove it or update it to match the addressing scheme of your network.

The screenshot shows the 'Network Settings' window for the 'eth0' interface. The 'Use Static IP' checkbox is checked. The IP address is set to 132.4.7.181, the Subnet is 255.255.0.0, and the Gateway is 132.4.7.1. The Command and Control Port is 14002. A blue callout box with a red arrow points to the IP address, Subnet, and Gateway fields, with the text 'Check network settings'.

Figure 12: Check Network Settings

Check Windows firewall:

Failure to allow access in the Windows Security Alert dialog during initial startup of the Panel Plus application can cause connection issues.

1. Close the Panel Plus software application and open the Windows Firewall Security Manager on the host PC.
2. Go to Inbound rules and delete the two *slapanelplus* rules (TCP and UDP).

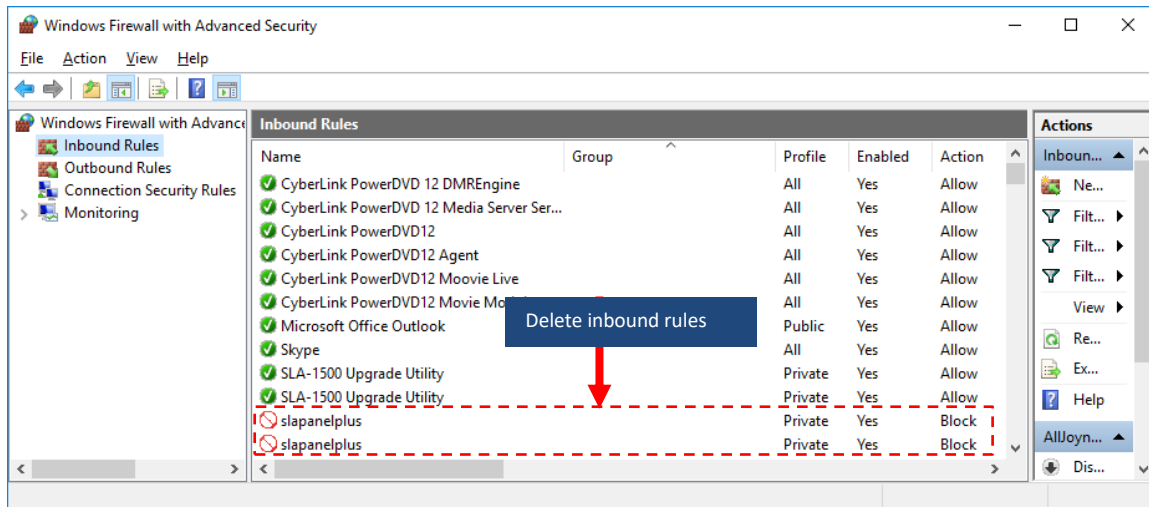


Figure 13: Windows Firewall Security Manager Fire - Delete Inbound Rules

3. Re-start the Panel Plus application and allow access in the Windows Security Alert prompt window.

Check hardware connections:

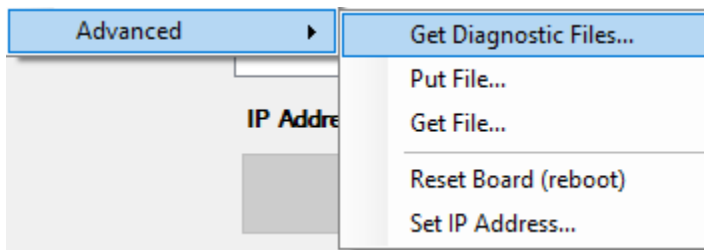
Make sure that all the boards are powered on. If connecting over the network, switch to a direct serial connection. See the [Serial Communications](#) section. The Panel Plus software will automatically recognize serial ports and list them in the drop-down menu for available connections.

Connecting to the serial port on the 4100-OEM board from a host PC requires TTL (3.3V) to USB serial cable w/ 3-pin Molex cable (SLA-CAB-0305).

9.1 Send Diagnostic Files to SightLine Support

In the event of a system malfunction or other issue the SLA-4100 Upgrade Utility can be used to retrieve crash logs and other diagnostic files from the board including parameter files, license files, etc.

1. Open the SightLine Upgrade Utility application.
2. Click the Find IP Addresses button to get a list of OEM boards on the network.
3. Click on the OEM to select it.
4. From the main menu » *File* » *Advanced* » *Get Diagnostic Files*.



5. Select a directory to put the data.
6. Click *OK*. The Upgrade Utility will zip up the files and then save them in the designated folder.

For more information on how to use the upgrade utility see the [EAN-Firmware-Upgrade-Utility](#).



Additional diagnostic information can also be obtained from the 4100-OEM by displaying the system log.

1. Establish an SSH session to the OEM with [Tera Term](#) (recommended) or similar application.
2. Login using the default username and password for the 4100-OEM: *s/root*
3. At the prompt, type:


```
dmesg
```
4. Copy the output and send it to [Support](#).

9.2 Nonfunctional SLA-4000-MIPI-IN Board (4000-MIPI-IN Kit)

I2C Bus 3 detect can be used to help diagnose issues with ports and/or cable connections on the SLA-4000-MIPI-IN board.

1. Remove all the adapter boards from the 4100-OEM.
2. Establish an SSH session to the 4100-OEM with [Tera Term](#) (recommended) or similar application.
Username and password: *s/root*
3. Run command: `i2cdetect -y -a -r 3`. The status of the SLA-4000-MIPI-IN board in Tera Term is shown in [Figure 14](#).

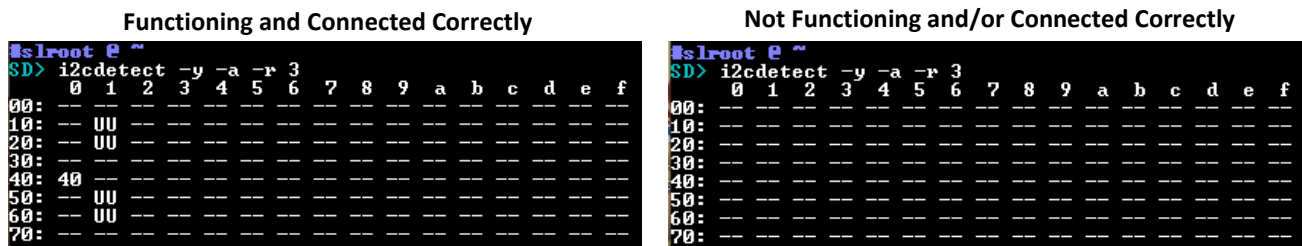


Figure 14: I2C Bus 3 Detect with Tera Term

4. If nothing shows up using I2C Bus 3 detect, check the SLA-CAB-MIPI-02 cable connection between the SLA-4000-IN MIPI board and the 4100-OEM, and then repeat steps 1 through 3.
- IMPORTANT:** To prevent damage to hardware boards, disconnect the power before connecting or disconnecting the SLA-CAB-MIPI-02 cable.
5. If the board is still not responding contact [SightLine Support](#).

9.3 Pigtail Cable Connections for HD-SDI EVAL Kit Camera

There could be several different mating connector configurations from the camera manufacturer for the HD-SDI 1080p camera included in the EVAL kit. The camera comes with a 2-pin and 3-pin pigtail cable pre-attached. If the pigtail is disconnected, reference [Figure 15](#) to reconnect it, based on the mating connector configuration on the camera.

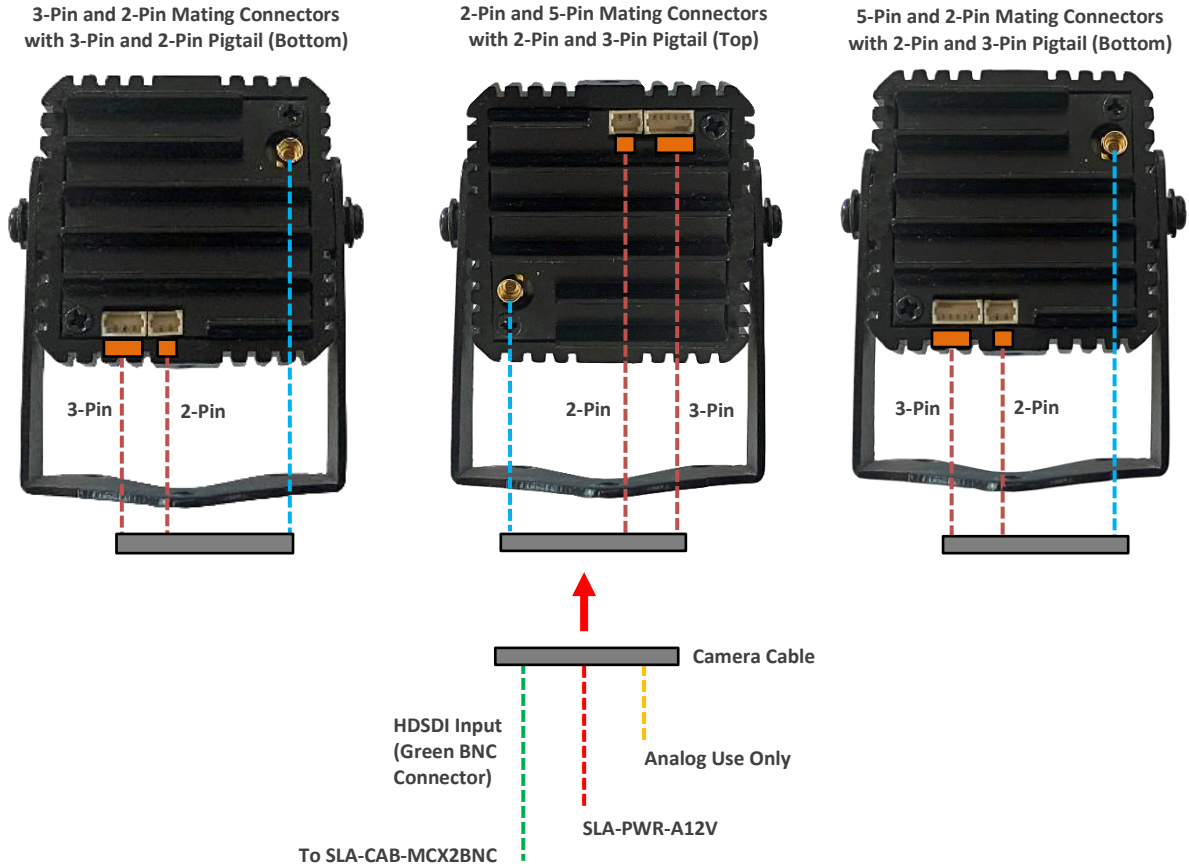


Figure 15: HD-SDI 1080p Camera Pigtail Cable Connection Options

9.4 Questions and Additional Support

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