



SightLine

APPLICATIONS

ICD-FFC-FPC-Camera Interfaces

PN: ICD-FPC-FFC-Camera Interfaces

12/5/2019

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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.*



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Revision History

Date	Description
12/5/2019	Added SLA-FPC-BOSON connector descriptions table.
11/12/2019	Added SLA-FPC-DRS camera interface board photo.
7/8/2019	Added new link to ICD-3000-4000 Adapter Boards document.
5/10/2019	Updated SLA-FPC-BOSON board to SLA-FPC-BOSON-E REV C
9/19/2018	Added VIOSEL information to table 1.
6/19/2018	Updated ICD to new format. Added SLA-FPC-BOSON board.



1 Overview

This document describes power requirements, thermal management, interface specifications, and connector pinouts for SLA-FFC and SLA-FPC camera interface boards. Camera interface boards can be connected to the appropriate OEM adapter board using a COTS FFC cable. Design files are also available for customers to build their own boards. Contact [Sales](#) for the latest boards available.

1.1 Available Adapter Boards

[SLA-FFC-TAU](#)

[SLA-FPC-DRS](#)

[SLA-FFC-QUARK](#)

[SLA-FFC-DRS](#)

[SLA-FPC-BOSON](#)

1.2 Associated Documents

[ICD-1500-OEM](#): Describes power requirements, thermal management, interface specifications, and connector pinouts for the 1500-OEM and 1500-AB accessory board.

[ICD-1500 Adapter Boards](#): Describes interface specifications, and connector pinouts for the 1500-OEM associated camera interface boards.


[ICD-3000-OEM](#): Describes power requirements, thermal management, interface specifications, and connector pinouts for the 3000-OEM.

[ICD-3000-4000 Adapter Boards](#): Describes interface specifications, and connector pinouts for the 3000-4000-OEM associated camera interface boards.

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

[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](#): A complete overview of settings and dialog windows located in the Help menu of the Panel Plus application.

 *Links to additional associated board EANs are in each section.*

1.3 Hardware Compatibility

Standard Ethernet network or serial connection to the SightLine hardware.

1.4 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.



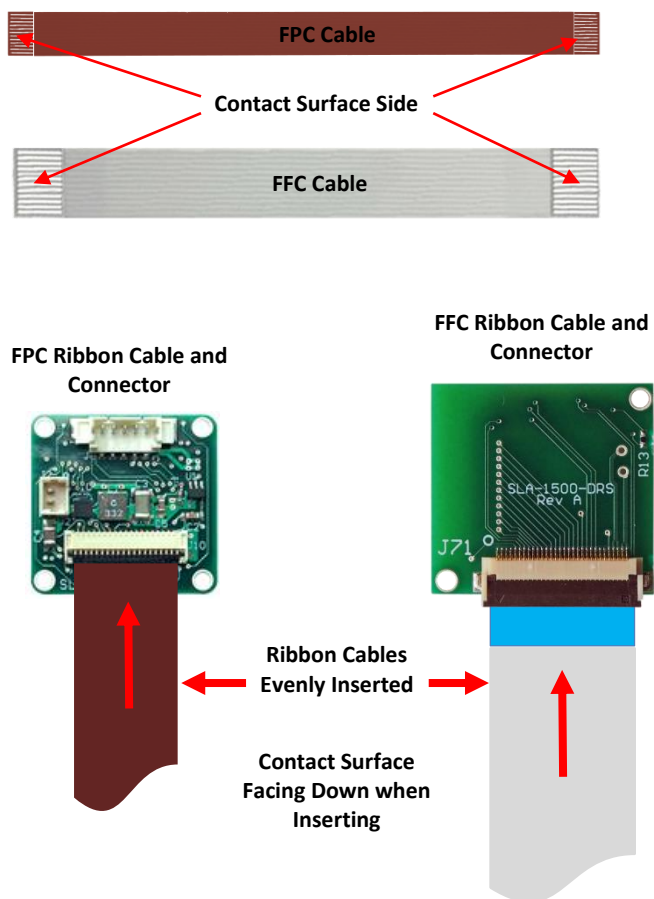
2 Safe Device Handling

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.

3 FFC-FPC Adapter Board Connections

Some adapter boards use the Molex FFC (Flexible Flat Cable) or an FPC (Flexible Printed Circuit) cable to connect to the camera. FFC and FPC connectors are a bottom contact design. The flip-lock is on top of the connector and the contact surface is on the bottom. This means that the metal contact surface of the cables must make contact with the connector contacts to have a proper interface. An incorrectly seated cable can cause a wide range of issues and unpredictable behavior.

There are two rows of contacts on the FPC cable and connector. Unlike the FFC connector the FPC connector is a low insertion force (LIF) design. Expect some considerable resistance pushing past the second row of contacts, especially with a new cable. Care should be taken to prevent the cable from over flexing.



Connection instructions:

1. Open the flip-lock on the connector. Use thumb or index finger. Do not use tools or excessive force.
2. Insert the ribbon cable (with the contact surface side down) straight into the connector (parallel to the PCB):

FFC: The FFC connector has a zero-insertion force (ZIF) design. No force is required for insertion.

FPC: Some pressure is required for a proper interface. Expect resistance at the second row of contacts before it stops.

3. Ensure that the FFC / FPC cable is fully inserted and parallel to the mounting surface. Close the flip-lock connector.

If the ribbon cable is moved at any time before the flip-lock is closed repeat the process starting at step 1.

Figure 1: FPC / FFC Cable Connections



4 Thermal Management

4.1 Gap Pads

When possible, some form of thermally conductive material for filling gaps between hot components and heat sink should be used. Examples such as the [Bergquist](#) VO Ultra Soft are recommended. Do not use gap pads in conjunction with thermal grease.

5 Camera Connector J7x

ⓘ IMPORTANT: For specific camera connector pinout descriptions, refer to the manufacturer's instructions and design recommendations.

Table 1: J7x Main Camera Connector

Pin	Description	Pin	Description
1	Camera TX	2	Camera RX
3	NC	4	NC
5	Ground	6	Digital Data 13
7	Digital Data 12	8	Digital Data 11
9	Digital Data 10	10	Digital Data 9
11	Digital Data 8	12	Digital Data 7
13	Digital Data 6	14	Digital Data 5
15	Digital Data 4	16	Digital Data 3
17	Digital Data 2	18	Digital Data 1
19	Digital Data 0	20	Ground
21	Pixel Clock Out	22	Frame Valid
23	Line Valid	24	NC
25	NC	26	VIOSEL out (to OEM)*
27	+5V Camera power in	28	+5V Camera power in
29	Ground	30	Ground

* VIOSEL out must match the camera voltage level for Digital Data, Pixel Clock, Line Valid and Frame Valid signals. This is +3.3V level for most cameras. This is used by the 1500-OEM for level translation.



6 SLA-FFC-TAU

Revision: A
Dimensions: 1.50 in x 1.50 in (38.10 mm x 38.10 mm)
Weight: 5 grams
Drawing: [SLA-FFC-TAU](#)
[SLA-FFC-TAU Exploded](#)
STEP File: [SLA-FFC-TAU STEP](#)
Rev History:

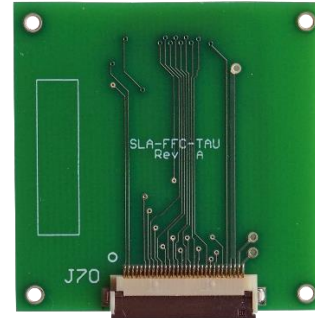


Figure 2: SLA-FFC-TAU Board

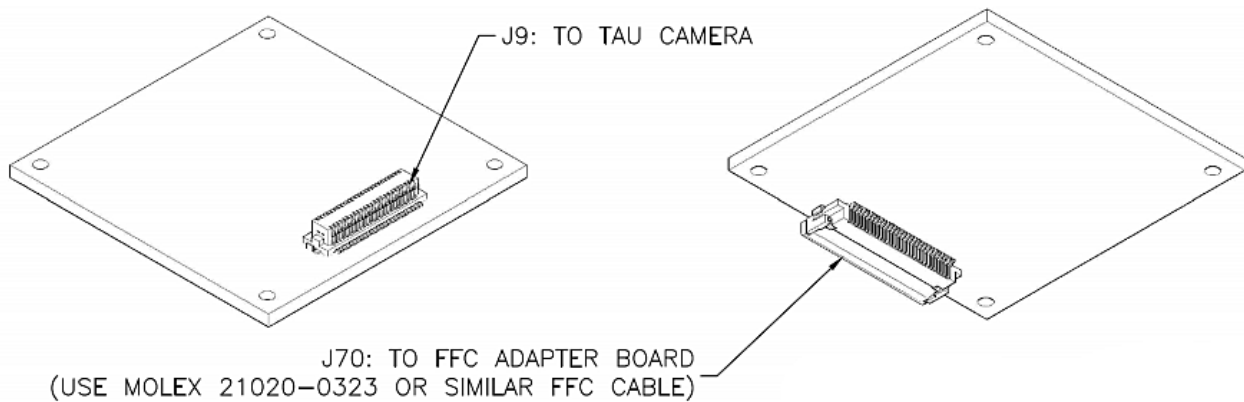


Figure 3: SLA-FFC-TAU Connector Callouts

Table 2: SLA-FFC-TAU Connector Descriptions

Label	MFG Part Number	Mates with:
J9	DF12B-50DS-0.5V(86)	FLIR TAU Camera
J70	FH12-30S-0.5SH(55)	FFC Cable (Molex 21020-0323)



7 SLA-FFC-DRS

The SLA-FFC-DRS board provides an interface to DRS Tamarisk cameras.

- Revision:** A
- Dimensions:** 0.99 in x 0.94 in (25.14 mm x 23.87 mm)
- Weight:** 2.5 grams
- Drawing:** [SLA-FFC-DRS](#)
[SLA-FFC-DRS Exploded](#)
- STEP File:** [SLA-FFC-DRS STEP](#)
- Rev History:**



Figure 4: SLA-FFC-DRS Board

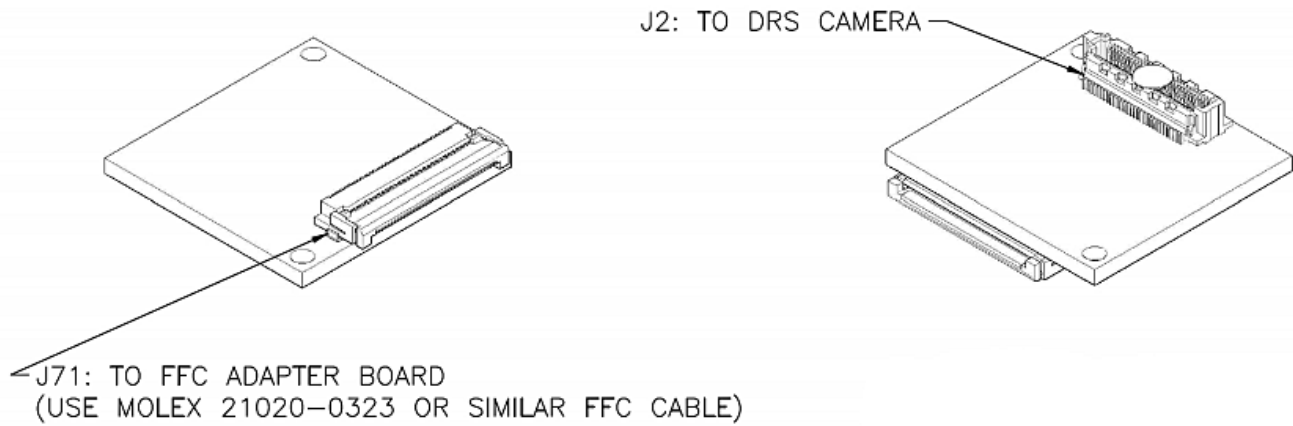


Figure 5: SLA-FFC-DRS Connector Callouts

Table 3: SLA-FFC-DRS Connector Descriptions

Label	MFG Part Number	Mates with:
J2	SS4-30-3.00-1-L-D-K-TR	DRS Tamarisk camera
J71	FH12-30S-0.5SH(55)	FFC Cable (Molex 21020-0323)



8 SLA-FPC-DRS

The SLA-FPC-DRS board provides an interface to DRS Tamarisk cameras.

- Revision:** A
- Dimensions:** 0.99 in x 0.94 in (25.14 mm x 23.87 mm)
- Weight:** 2.5 grams
- Drawing:** SLA-FPC-DRS
- STEP File:** [SLA-FPC-DRS STEP](#)
- Rev History:**

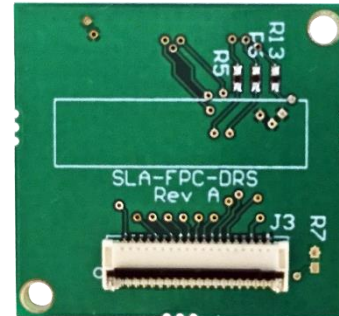


Figure 6: SLA-FPC-DRS Board

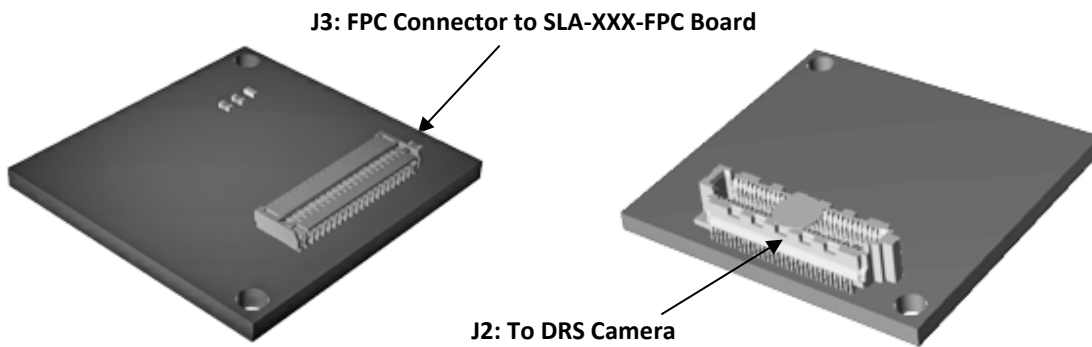


Figure 7: SLA-FPC-DRS Connector Callouts

Table 4: SLA-FPC-DRS Connector Descriptions

Label	MFG Part Number	Mates with:
J2	SS4-30-3.00-L-D-K-TR	DRS Tamarisk camera
J3	501912-3990	Molex 15015-0439, SLA-CAB-FPC04



9 SLA-FFC-QUARK

Revision: A
Dimensions: 0.87 in x 0.87 in (22.09 mm x 22.09 mm)
Weight: 2.3 grams
Drawing: [SLA-FFC-QUARK](#)
[SLA-FFC-QUARK Exploded](#)
STEP File: [SLA-FFC-QUARK STEP](#)
Rev History:



Figure 8: SLA-FFC-QUARK Board

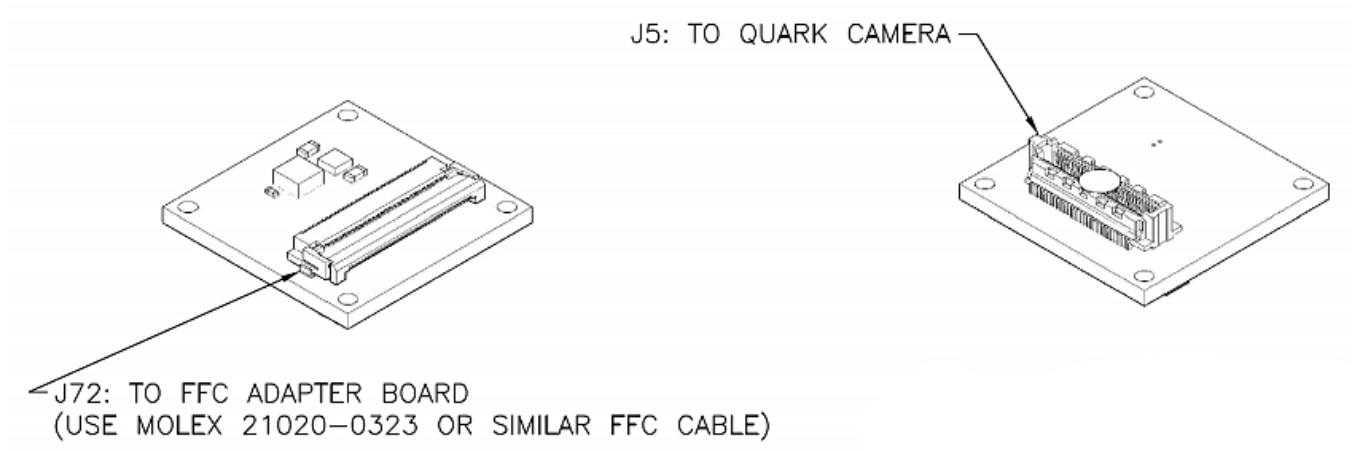


Figure 9: SLA-FFC-QUARK Connector Callouts

Table 5: SLA-FFC-QUARK Connector Summary

Label	MFG Part Number	Mates with:
J5	SS4-30-3.00-1-L-D-K-TR	FLIR Quark camera
J72	FH12-30S-0.5SH(55)	FFC Cable (Molex 21020-0323)



10 SLA-FPC-BOSON-E

Revision:	C
Dimensions:	0.83 in x 0.83 in (21.08 mm x 21.08 mm)
Weight:	2.3 grams
Drawing:	SLA-FPC-BOSON
STEP File:	SLA-FPC-BOSON STEP
Rev History:	<p>B: Corrected routing.</p> <p>B1: Corrected serial communications.</p> <p>C: External power connector added for Boson 640 camera.</p>



Figure 10: SLA-FPC-BOSON-E Board

For the Boson 320 camera, the adapter board is also available without the external camera power connector, part number SLA-FPC-BOSON. In this configuration the camera power is supplied by the OEM board.

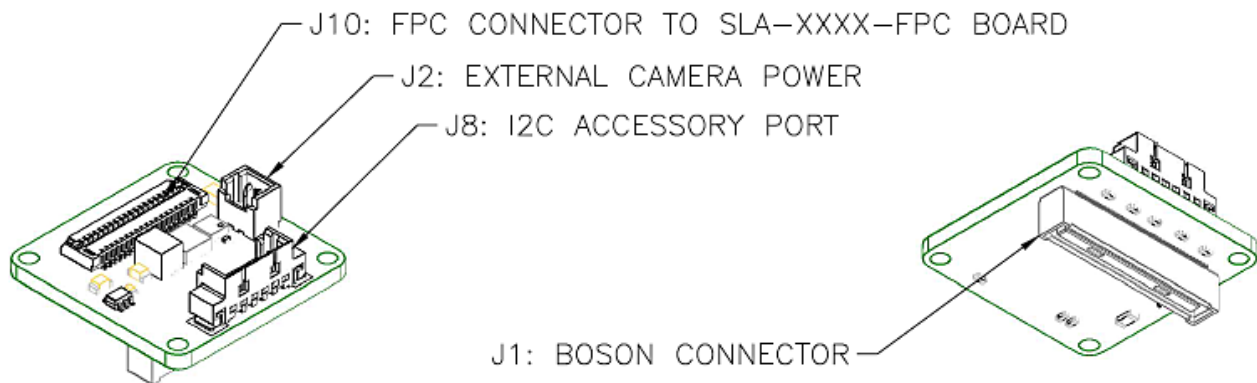


Figure 11: SLA-FPC-BOSON Connector Callouts

Table 6: SLA-FPC-BOSON Connector Callouts

Label	MFG Part Number	Mates with:
J1	DF40HC-(4.0)-80DS-0.4V(51)	Boson camera
J2	53047-0210	SLA-CAB-0202 (Molex: 51021-0200) Camera power: Vin = 5 - 15VDC, 5W
J8	53398-0571	Molex 51021-0500 (housing) and 0500588000 (terminals)
J10	501912-3990	Molex 15015-0439, SLA-CAB-FPC04



Table 7: SLA-FPC-BOSON Connector Descriptions

Connector	Description		
	Connector J2: External Camera power	Pin	Signal
1		Vin 5-15V, 5W	
2		Ground	
Connector J8: I2C Accessory Port (SLA-3000-FPC only)	Pin	VIN0 Description	VIN1 Description
	1	3.3V	3.3V
	2	GND	GND
	3	NC	NC
	4	I2C1 - SDA	I2C3 - SDA
	5	I2C1 - SCL	I2C3 - SCL

11 Cables

SLA-FFC boards are designed to work with MOLEX 21020-0323 0.50mm Pitch Premo-Flex™ FFC jumper, same side contacts (type A), 30 circuits, 0.127 m cable length, 0.27 mm cable thickness, Tin (Sn) plating.

Longer and shorter cables have also been tested with positive results.

SightLine part number: SLA-CAB-FF06

MFG part number: MOLEX 21020-0323

Cable description: CABLE FFC 30POS 0.50MM 5 inch

SLA-FPC boards are designed to work with MOLEX 15015-02=439 Premo-Flex™ 39 Position FPC Cable 0.012-inch (0.30 mm) Pitch, 2.000-inch (50.80 mm), 4.000-inch (101.60 mm), or 6.000-inch (152.40 mm) length.

SightLine part number: SLA-CAB-FPC02, SLA-CAB-FPC04, SLA-CAB-FPC06

MFG part number: MOLEX 15015-0239, 15015-0439, 15015-0639

Cable description: CABLE FFC 39POS 0.30MM

12 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.