SLA-2000 Hardware Reference Manual

October 3, 2013

Hood River, OR 97031

ITAR

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Overview

Document describes the **SLA-2000-OEM** hardware and accessories.

SLA-2000-OEM

Board Summary

Dimensions	3.375” x 2.875” x 0.55”
Weight	1.5 oz
Voltage	8 – 15 VDC

Table 1: SLA-2000-OEM Physical Characteristics

Analog Video Connector (J2)

Features:

- Analog Video Inputs (x4)
- HD/SD Video Output
- I^2C
- RS-232 (x1)
- Ethernet (10/100Base-T)
- Discrete GPIO (x2)
- Input Power & Ground

Hardware

Location	Bottom of board (J2)
Connector PN	Samtec LSS-120-01-L-DV-A
Mating Connector PN	Samtec LSS-120-01-L-DV-A

Table 2: SLA-2000-OEM Analog Connector (J2)

Pin Out:

Pin	Signal	Signal	Pin	Description
1	ROut	BOut	2	HD Out
3	G/C Out	AGND	4	HD/SD Out
5	AGND	AGND	6	Analog Ground
7	C1in	C2in	8	SD In – 4 concurrent
9	AGND	AGND	10	
11	C3in	C4in	12	SD In – 4 concurrent
13	AGND	AGND	14	
15	AHSYNC	AVSYNC	16	Analog Sync
17	HDVSYNC	HDHSYNC	18	Sync for HD Out
19	DHSYNC	DVSYNC	20	Digital Sync
21	GPIO8	GPIO9	22	GPIO
23	SCL	SDA	24	I^2C
25	DGND	DGND	26	
27	RX1	TX1	28	RS-232
29	RX+	TX+	30	Ethernet 10/100Base-T
31	RX-	TX-	32	
33	DGND	DGND	34	Ground Return
35	DGND	DGND	36	
37	VIN	VIN	38	Input Power
39	VIN	VIN	40	

Table 3: SLA-2000-OEM Analog Connector (J2) Pin Out

NOTE: RS-232
This is a TTL level signal. On the SLA-2000-AB there is an RS-232 to TTL converter (U1).

NOTE: Power
8 – 15VDC. Current limit? Nominal Current?

NOTE: Ground

NOTE: SD inputs

NOTE: Ethernet

Digital I/O Connector (J3)

Features:

- Digital Video Inputs
- I^2C
- RS-232 (x2)
- Discrete GPIO (x2)
- Input Power & Ground

Signal

- Digital Video feeds into CPLD which can convert from any format into format that feeds into DSP
    - Example: CPLD generates BT 1120 (HD-SDI becomes BT-1120 by CPLD)

Hardware

Location	**Top of board (J3)**
Connector PN (J3)	Samtec **ERF8**-040-5.0-S-DV-L-TR (female)
Mating Connector PN	Samtec **ERM8**-040-5.0-S-DV-L-TR (male)

Table 4: Digital I/O Connector (J3)

Pin	Signal	Signal	Pin	Description
1	DGND	DGND	2	Ground return
3	DGND	DGND	4	
5	DGND	DGND	6	
7	DGND	DGND	8	
9			10	
11	DGND	DGND	12	
13	SCL	SDA	14	I^2C
15	GPIO10	GPIO11	16	DSP GPIO
17	DGND	DGND	18	
19	VPCK0	VPCK1	20	Video Port Clocks
21	VPCO0	VPCO1	22	Video Port Controls
23	DGND	DGND	24	
25	VPCO2	DGND	26	
27			28	
29	DGND	DGND	30	
31	VPD2	VPD3	32	Video Port Data
33	VPD4	VPD5	34	
35	DGND	DGND	36	
37	VPD6	VPD7	38	
39	VPD8	VPD9	40	
41	DGND	DGND	42	
43	VPD12	VPD13	44	
45	VPD14	VPD15	46	
47	DGND	DGND	48	
49	VPD16	VPD17	50	
51	VPD18	VPD19	52	
53	DGND	DGND	54	
55	VPD22	VPD23	56	Extra Video Port Data
57	VPD24	VPD25	58	
59	DGND	DGND	60	
61	VPD26	VPD27	62	
63	VPD28	VPD29	64	
65	DGND	DGND	66	
67	RX1	RX2	68	RS-232
69	TX1	TX2	70	
71	DGND	DGND	72	
73	P3P3V	P3P3V	74	Daughter Power
75	P3P3V	P3P3V	76	
77	DGND	DGND	78	
79			80	

Table 5: SLA-2000-OEM Digital Video Connector (J3) Pin Out

Programming I/O Connector (J1)

Features:

- JTAG (DSP & CPLD)
- I^2C
- RS-232 (x2)
- Discrete GPIO (x2)
- Input Power & Ground

Hardware

Location	**Top of board (J1)**
Connector PN (J3)	Samtec **ERM8**-040-5.0-S-DV-L-TR (male)
Mating Connector PN	Samtec **ERF8**-040-5.0-S-DV-L-TR (female)

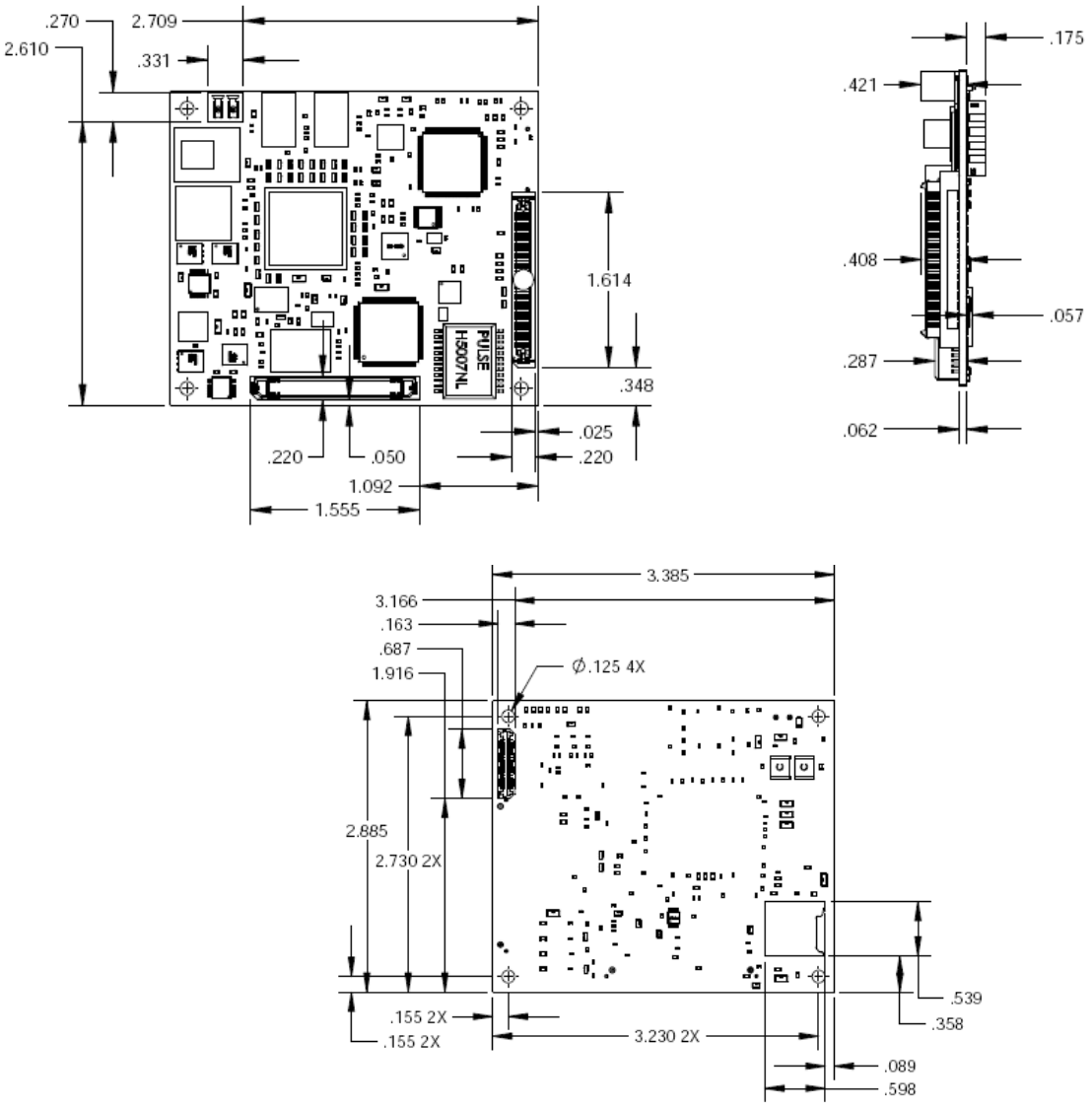
Table 6: Programming I/O Connector (J1)

Pin	Signal	Signal	Pin	Description
1	DGND	DGND	2	Ground return
3	DGND	DGND	4	
5	DGND	DGND	6	
7	RX1	RX2	8	RS-232 (3.3V TTL)
9	TX1	TX2	10	RS-232 (3.3V TTL)
11	DGND	DGND	12	
13	SCL	SDA	14	I^2C
15	GPIO8	GPIO9	16	DSP GPIO
17	DGND	DGND	18	
19	PIC-PGD	PIC-PGC	20	PIC PROGRAMMING
21	PIC-VPP	3P3V	22	
23	DGND	DGND	24	
25	DSP-TDI	DSP-TDO	26	DSP JTAG
27	DSP-TMS	DSP-TCK	28	
29	DGND	DGND	30	
31	DSP-TRST*	3P3V	32	
33	DSP-EMU0	DSP-EMU1	34	
35	DGND	DGND	36	
37	CPLD-TDI	CPLD-TDO	38	CPLD JTAG
39	CPLD-TMS	CPLD-TCK	40	
41	DGND	DGND	42	
43	TXPA	TXPA	44	
45	TXNA	TXNA	46	
47	DGND	DGND	48	
49	TXPB	TXPB	50	
51	TXNB	TXNB	52	
53	DGND	DGND	54	Gigabit Ethernet
55	TXPC	TXPC	56	
57	TXNC	TXNC	58	
59	DGND	DGND	60	
61	TXPD	TXPD	62	
63	TXND	TXND	64	
65	DGND	DGND	66	
67	CGND	VIN	68	
69	VIN	VIN	70	
71	DGND	DGND	72	
73	VIN	VIN	74	Power Input
75	VIN	VIN	76	
77	DGND	DGND	78	
79			80	

Table 7: SLA-2000-OEM Programming Connector (J1) Pin Out

SLA-2000-OEM Drawings

Top View



Additional Files

Available upon request.

- SLA2000-RC.pdf - PDF of mechanical drawing
- SLA2000-RC.DXF - DXF of mechanical drawing
- SLA2000-RC.SLDDRW - Solidworks drawing of mechanical drawing
- SLA2000-RC.SLDPRT - Solidworks Assembly saved as a part file
- SLA2000-RC-3D.step - 3D step file made from Solidworks assembly

Appendix C: SLA-2000-AB Analog Board Reference Design

Dimensions	4.725” x 3.925” x 0.75”
Weight	3.9 oz
Revision	

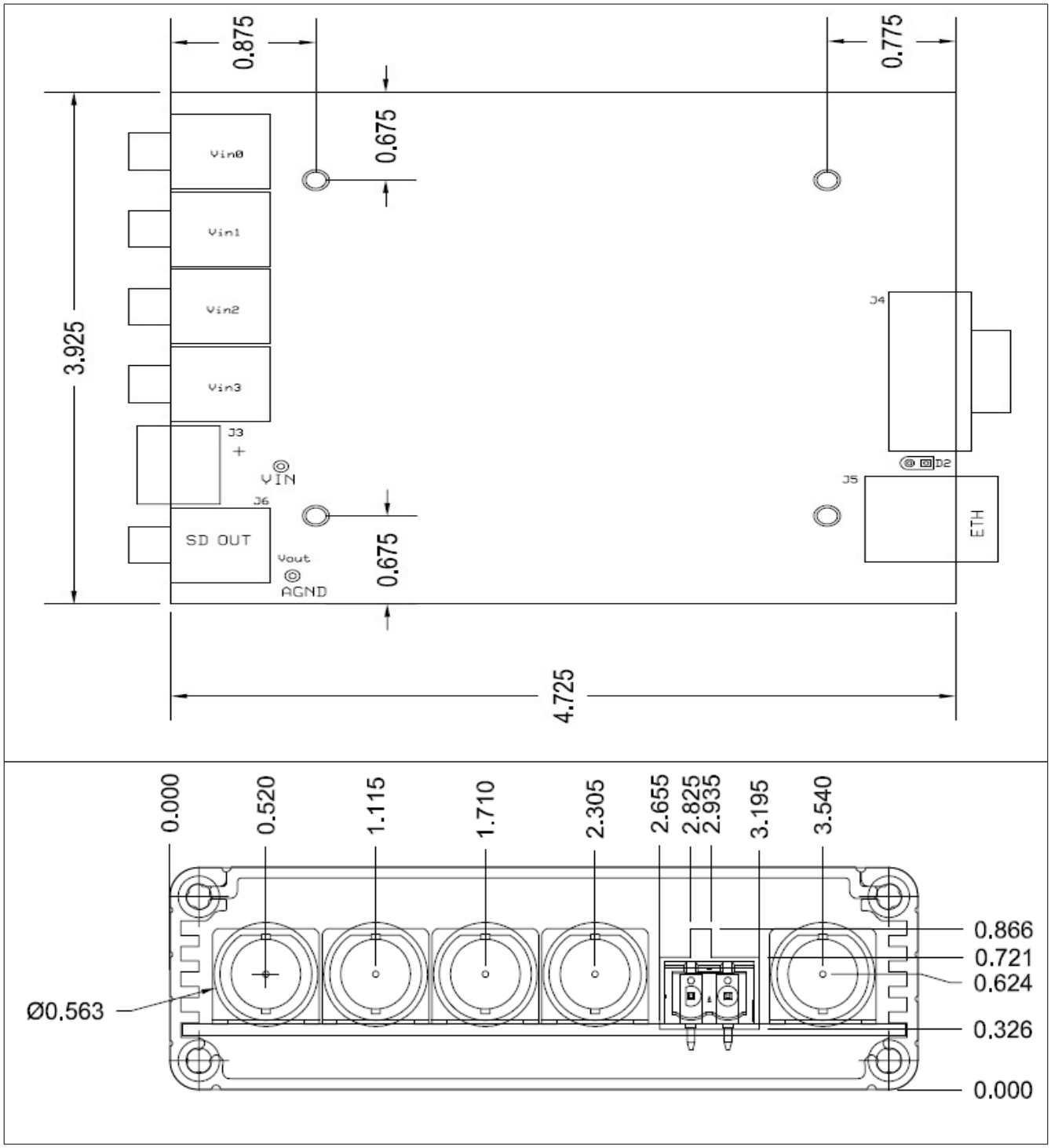
Table 8: SLA-2000-AB Analog Board Physical Summary

Connectors

Position	PN	Short	Long
J1	LSS-120-01-L-DV-A	Samtec 40 pin	SLA-2000-OEM Analog Connector
J7	1-1478031-0	BNC	Analog Video In 0 (C1)
J8	1-1478031-0	BNC	Analog Video In 1 (C2)
J9	1-1478031-0	BNC	Analog Video In 2 (C3)
J10	1-1478031-0	BNC	Analog Video In 3 (C4)
J6	1-1478031-0	BNC	Analog Video Output
J4	182-009-113R531	DB-9	RS-232
J3	1757242	2-pin term. block	Power
~~J2~~	~~181-015-213R171~~	~~DB-15~~	~~HD Video Output~~
J5	5520250-3	RJ-45	Ethernet

The **SLA-2000-AB** is designed as a benchtop test platform which allows the SLA-2000-OEM board to be directly mounted using the LSS cable and mounting holes. Power, Ethernet, Serial and Video can all be tested using this carrier board. It is also available in an enclosure (SLA-2000-ENC or SLA-2000-ENC-IP67).

Drawings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0.775
0.675
Vin0
Vin1
Vin2
Vin3
3.925
J3
VIN
J6
SD OUT
Vout
AGND
0.675
J4
D2
J5
ETH
4.725
0.000
0.520
1.115
1.710
2.305
2.655
2.825
2.935
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3.540
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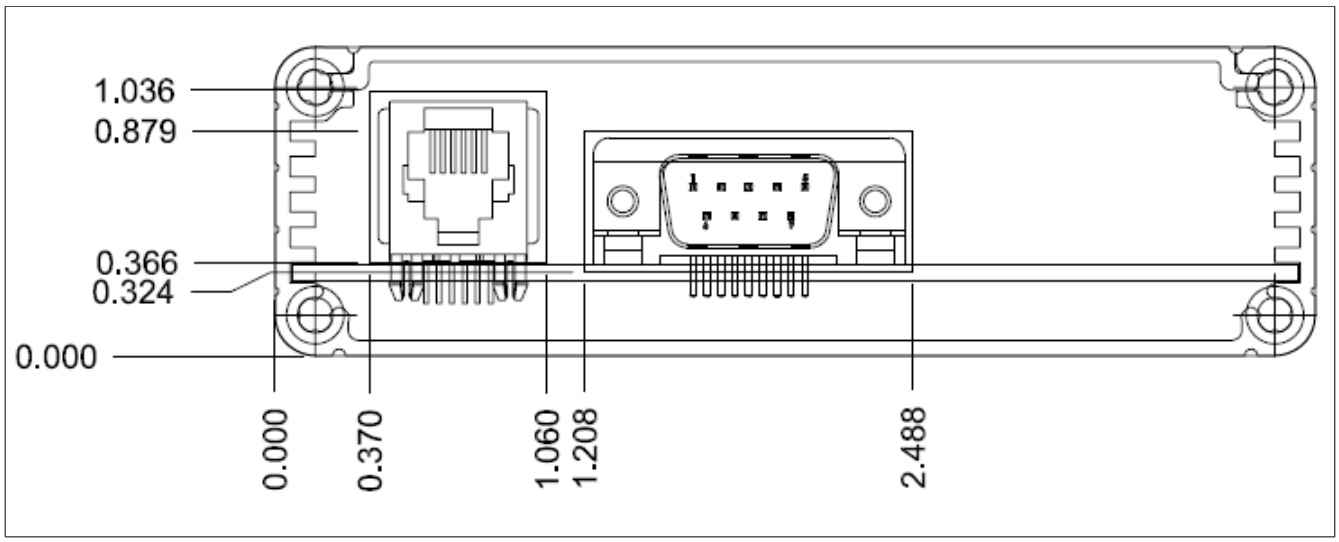
0.624
0.326
0.000
Ø0.563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0.000
0.000
0.370
1.060
1.208
2.488

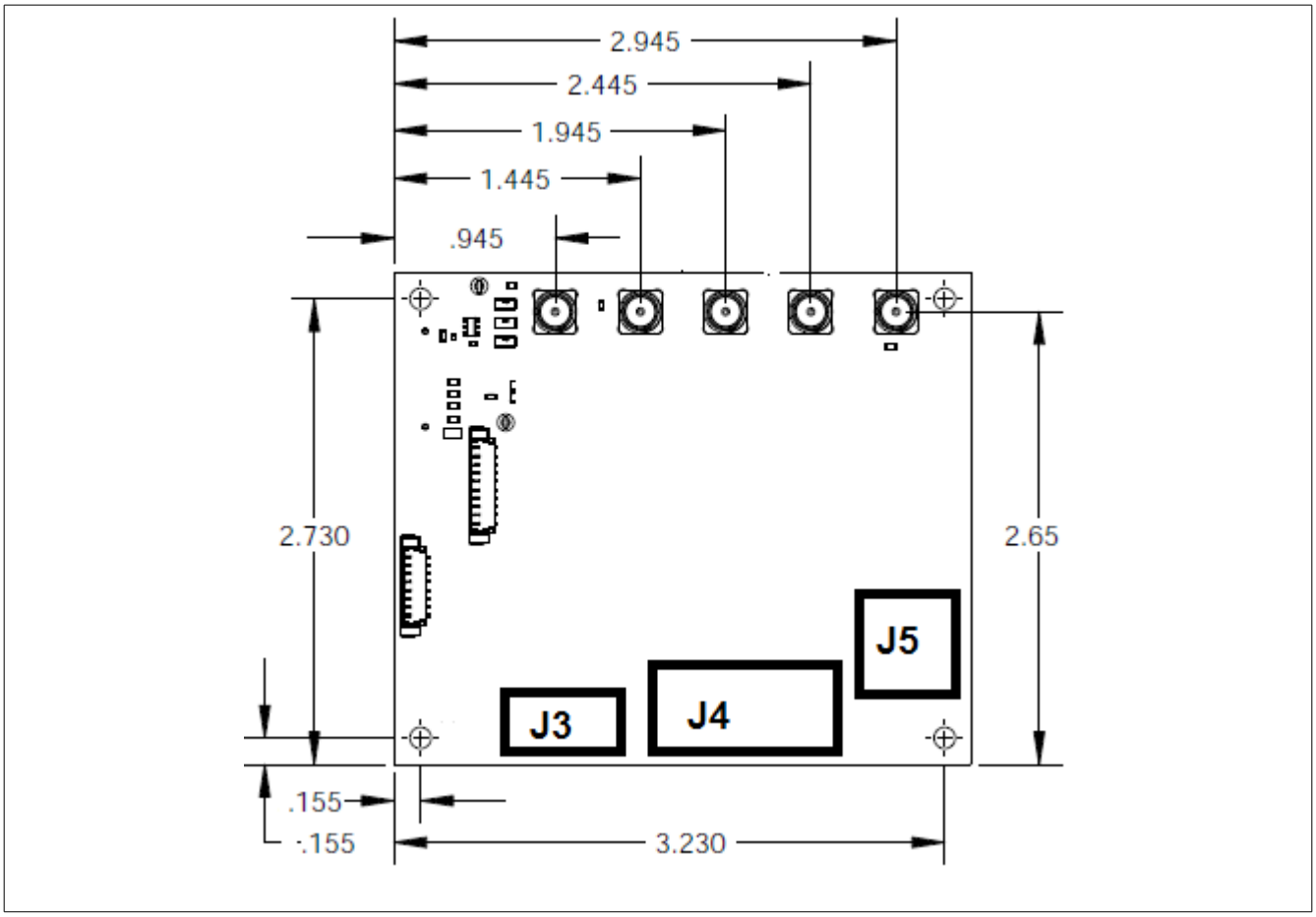
SLA-2000-sAB Analog Board Design(PRELIMINARY)

Designed to be a smaller adapter board which provides access to power, Ethernet, serial and video.

Connectors

Position	PN	Short	Long
J1	LSS-120-01-L-DV-A	Samtec 40 pin	SLA-2000-OEM Analog Connector
J7	1-1478031-0	SMA	Analog Video In 0 (C1)
J8	1-1478031-0	SMA	Analog Video In 1 (C2)
J9	1-1478031-0	SMA	Analog Video In 2 (C3)
J10	1-1478031-0	SMA	Analog Video In 3 (C4)
J6	1-1478031-0	SMA	Analog Video Output
J4	182-009-113R531	DB-9	RS-232
J3	1757242	2-pin term. block	Power
J5	5520250-3	RJ-45	Ethernet

Drawings



History

2013-OCT-03: Removed schematics. Added drawing for AB Boards

2012-MAR-23: Added ITAR and minor text edits

2.06 Consolidated Digital and Programming Connectors

2.05 Update dimensions of analog board, table headings, contact info.

2.04 Update to analog board schematic and J2 pin description.

2.03 Initial Public Release

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